

CHOICE

THE GREAT NAPPY DEBATE

Cloth vs disposable

CHANGING YOUR MORTGAGE

When is it worth refinancing?

COCKROACH KILLERS!

The best products for getting rid of the roach

Dishwashers



Petrol lawnmowers



Telephones



CHOICE

The magazine of the Australian Consumers' Association ACN 000 281 925

Council Member of the International Organisation of Consumers' Unions

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The Australian Consumers' Association exists to assist and empower consumers

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Market statistics provided by GFK Marketing Services Pty Ltd.

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All products tested for CHOICE are bought randomly in the marketplace and no samples are accepted. Evaluations are based on tests, trials and expert judgments as appropriate. These findings should not be applied to models other than those nominated in CHOICE. We do not necessarily evaluate every available product or service in a particular class. We check the results of our tests just before publication with manufacturers, but specifications and quality may vary. If this issue is no longer current check with us or the manufacturer to determine if important changes have taken place before you buy. It, despite our extensive checking, a mistake slips through we will publish a correction as soon as possible.

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Editorial

SOME CHOICE articles take longer to put together than others. Nappies — the real dirt, which starts on page 6, must be one of the longest.

Back in early 1992 we decided the heated debate about the relative environmental impacts of cloth and disposable nappies could well do with the light of reason being switched onto it, but we discovered there was very little independent information available about how Australians use nappies. Almost all the existing research came from overseas, mainly from the US, and if we wanted to answer the environmental question in an Australian context we'd first have to find out what actually happens here.

So we put together a questionnaire asking people who care for children what type of nappy they use and why, what brand if they use disposables and why, what problems they've experienced, what they do with used disposables, how often they wash cloth nappies, in what kind of washing machine and using what temperature water, a dryer or no dryer ... in total, more details about nappies than many people may care to know. But it did give us a picture of Australian usage.

In the meantime we gathered evidence about the environmental cost of both types of nappy in terms of water and energy consumption, use of raw materials, water and air pollution and production of solid waste, read three lifecycle analyses of nappies from the US (and were fairly unlightened by all of them), and worked out the cost of keeping your baby in disposables for 2½ years vs dozens of different home laundering scenarios vs using a nappy service.

It was a mammoth project that occupied CHOICE staff for well over a year, and even if you don't have any children in nappies we're sure you'll find plenty to interest you in our report.

Jane Mackenzie, Editor



*Features***6 Nappies — the real dirt**

The full story on cloth and disposable nappies — what people use and why, what it costs them and how the environment pays.

12 Refinancing your home mortgage: when to jump?

There are lots of home mortgage deals on offer to tempt you out of your existing loan. Our guide helps you decide whether to sit, jump or hunt further.

23 The 1993 CHOICE Childcare Survey

CHOICE is investigating the availability, cost and quality of childcare in Australia for an article to be published in mid-1994. Please help us by filling in this questionnaire if you use childcare services, or passing it on to friends or family who do.

*Tests***17 Dishwasher update**

Vulcan Dishlex is a popular brand that missed out on our February test because its new models hadn't been released, so we've tested three of them for this update.

27 Cockroach killers

Can you get a product that kills your cockroaches for up to three months without leaving a coating on every available surface and you choking for breath? Yes.

35 Petrol lawnmowers

Pull-start petrol mowers that cost less than \$500 are by far the biggest-selling type of lawnmower in Australia. Most of the ones we tested were satisfactory, but we did find one dud.

40 Telephones

Around two and a half million people in Australia own a phone instead of renting one from Telecom. We tested models with memories that cost the same as or less than the standard Telecom Touchfone 200, and found you can get the same level of performance for less money — the main choice you have to make is between features.

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Is there such a thing as a kinkproof hose? Not quite — but some came very close in our test.

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Smog Action Week; unsafe waterbed; parents and computers; baby walkers under scrutiny; life insurance policy changed thanks to CHOICE report.

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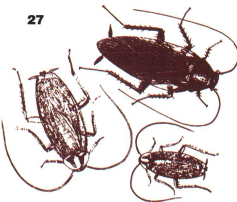
A new regular page that will cover all aspects of food and health and keep you up to date with the latest developments. This issue: refreezing food; beating stress.

47 What do you know?

This month our regular consumer quiz checks out your knowledge of computers — and beer.



Cover photo: Australian Picture Library/ZEFA

**Next issue**

Video games systems, gourmet brie, two litre cask wine, drinks coolers, CHOICE's Annual Buying Guide, 'junk' insurance, dental care.

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Tests: Car CD players, blenders, car reliability survey, breakfast cereals, large fridges, car security locks, toasters, clothes dryers, compact binoculars.

Features: Domestic air travel, tips on buying a sofa bed, real estate fees, extended warranties, buying Australian, dealing with pets' fleas, how private is personal information?, investment options, how to choose carpet, charities, near-monopolies.



CHOICE CUTS

Driving

PREPARE FOR ACTION

SYDNEY'S motorists are about to be asked to rethink the way they use their cars and to take some personal action to reduce air pollution. Motorists' organisation the NRMA is sponsoring Smog Action Week, to be held in the city from November 8-12. The main aims are to highlight the link between car use and air pollution, and promote the other commuting options available.

Sydney is one of the world's big car cities. Although it has a higher level of public transport use than our other mainland state capitals, it compares badly with European and Asian cities, and suffers from relatively high levels of road congestion and smog. It's estimated over 2.5 million car trips taking people to and from work are made there each weekday. The average

occupancy rate of these cars is around 1.2, so it takes five cars to move only six people.

The NRMA is hoping Smog Action Week will be a catalyst for behavioural changes which will be of lasting benefit. It is urging car owners to do something positive during the week and has organised a variety of programs to encourage this, with co-operation from other organisations including the State Transit Authority, City Rail, the Department of Transport and the Australian Conservation Foundation.

Suggestions for what you can do include:

- Share rides — ring the NRMA on (02) 260 9308 for advice on setting up a work-based ride-sharing program.

- Take public transport for all or part of your regular journeys. During Smog Action Week there'll be entertainment provided for travellers at some bus/rail interchanges, and prizes will be raffled for added incentive.

- Ride a bike — the Bicycle Institute of NSW will be guiding people on Wednesday November 10 from various points around the suburbs to show them safe routes to commercial centres — phone (02) 212 7048 or fax (02) 212 1867 for details.

- Have your car emission control equipment checked. The NRMA is offering free visual checks — ring (02) 260 9166 to make a booking.



Correction

FINDING A GOOD TRADESPERSON

July 1993

ON PAGE 16 we said builders, carpenters and painters in SA must be licensed by the Builders' Licensing Board. We have since been informed this body was abolished some time ago and that the Commercial Tribunal is the authority responsible for issuing licences.

As we also stated, the Office of Fair Trading provides a conciliation service for domestic building work disputes, with no financial limitations attached to complaints. However, it has no power to order builders to rectify faulty building work. Consumers seeking a rectification order for domestic building work should apply to the Commercial Tribunal if the value doesn't exceed \$20 000. Claims above this should be made in the Magistrates Court.

Education

PARENTS AND COMPUTERS

AS A PARENT, do you feel you're being dragged kicking and screaming — and ignorant — into the world of computing? Do you feel increasingly out of touch with the familiarity with computers your children experience every week at school? If so, a national magazine — *Parents and Computers* — recently launched by a Perth-based publisher could help bridge the knowledge gap.

Like CHOICE the magazine accepts no advertising, supporting itself from subscriptions alone in order to print unbiased assess-

ments of computers and software. It claims to cater for parents who want to know which computer to buy and which software to purchase as well as learn to more about computers, particularly as used in education.

It's an attractive, easy to read magazine with plenty of feedback from real people and only occasional lapses into computer jargon. If you're interested in subscribing, contact *Parents and Computers*, Perth Technical Writers, PO Box 797, Subiaco 6008; phone and fax (09) 387 8135.



Safety warnings

HOTBED OF CONTENTION

ELECTRICAL safety warnings have been appearing in the media for faulty waterbed heater pads capable of scorching the bed. The brands affected are HEAT-WAVE, NIGHTMOODS, TECH MIRAGE and TRANQUILITY. What's more, if you try to dismantle the bed to see what's going on it's possible you may come in contact with live parts.

A straightforward case for a product safety recall and a refund? Not quite.

The safety notice in the papers advises consumers to "Please contact your place of purchase to negotiate a replacement..." Negotiate? What's going on?

According to the Waterbed Association of Retailers and Manufacturers, the manufacturer, Heating Systems Pty Ltd, has gone into

liquidation and is not paying compensation to consumers or initiating a recall. The Association estimates 40-50 000 of the pads have been sold in Australia — who's going to pick up the tab?

Discussions between the Waterbed Association and the Federal Bureau of Consumer Affairs have led to warning notices in the press, but it's up to consumers to find a sympathetic retailer to sell them a replacement unit at a discount price. If it goes according to plan the retailer and consumer will each bear part of the cost.

For other product identification details, turn to *Recalls and bans* on page 47. If you want more advice you can contact the Waterbed Association of Retailers and Manufacturers on (02) 621 3275.

Child safety

Baby walkers: parents need educating about how fast children can move in them.



BABY WALKERS STILL UNDER SCRUTINY

LAST DECEMBER the NSW Department of Consumer Affairs began an investigation into the safety of baby walkers (see photo). There had been many accidents involving these nursery products and there was some community pressure to ban or recall the class of product.

What's the problem? A baby walker is a frame on wheels in which a baby can be supported. The baby can propel the walker across the floor by his or her legs. This makes the baby very mobile—and fast-moving! Some have walked under unguarded stairs or grabbed hold of electrical appliances, for example, and suffered injury.

Is it the fault of the product or the guardian?

In its report, the Product Safety Committee decided not to recommend a product recall or ban. It found no conclusive evidence that babies using baby walkers had more accidents than those who did not.

However, it was considered these products enabled small children to reach higher to get hold of potentially dangerous objects, and also to move into dangerous areas of the home (such as stairwells) at a much earlier age than normal.

Following the strategy recommended by the Consumers' Association, the Department is preparing regulations for new labels or swing tags to alert anyone buying a baby walker to the dangers associated with unsupervised use of these nursery products. Ongoing community education has also been recommended, and special brochures on the matter should be developed for maternity hospitals, ante-natal clinics and community centres.

Postscript: The federal Minister for Consumer Affairs, Jeanette McHugh, has asked the federal Bureau to conduct an urgent inquiry into the safety of baby walkers. It seems the issue is not yet settled.

Life insurance

THE TERMS THEY ARE A-CHANGING

AS A RESULT of our recent survey of term life insurance policies (*For the term of your life*, CHOICE, September 1993), Tyndall Life has decided to change some clauses in its policy.

The Tyndall policy could not be recommended in our article for several reasons. It would not accept total and permanent disability claims if the disability was the result of pregnancy, childbirth or related conditions.

The policy also would not pay a claim if the insured person committed suicide within 18 months of taking out the policy, whereas recommended policies would pay

suicide claims after 12 or 13 months.

Tyndall has decided to remove the pregnancy exclusion from its policy and reduce the suicide exclusion to 13 months.

In the past policyholders have been required to report claims within two months (or as soon as reasonably practical). Our analysis has encouraged Tyndall to extend its claim reporting period to 12 months or as soon as reasonably practical.

Tyndall's national risk product manager, Col Fullagar, says the changes will be offered to both new and existing policyholders.

Updates

WALL OVENS

October 1993

We reported on page 45 that problems had developed during testing with the **FISHER & PAYKEL 755T** oven's meat probe. After extensive discussions with Fisher & Paykel we've been able to identify the problem. Some plugs on the meat probes were fitted with a soft silicone surround which allows the plug to be pushed beyond the correct position, thus shorting the probe and preventing it from working. Other meat probes have a harder silicone surround which doesn't allow this to happen.

Unfortunately there's no way to identify which ovens have which kind of probe, so if you experience this problem you'll need to contact a Fisher & Paykel representative to have it fixed. Check the literature that came with your oven or the phone book for an address close to you, or try the retailer you bought the oven from.

WATER HEATERS

August 1993

The Gas and Fuel Corporation of Victoria was surprised to read our statement on page 26 that a gas hot water system would cost approximately \$1 per week more to run in Melbourne than an off-peak electric one, and queried this result. We did some more calculations involving different types of gas water heater, and thought Melbourne readers might be interested in some more detailed information.

If you exclude all supply charges from the equation (we included them for our August report), the following picture emerges:

■ **A high-efficiency** gas water heater will cost around \$3 per year less for light usage (a one or two-person household) and around \$14 per year less for heavy usage, compared with electric off-peak water heating.

■ **The cheaper and more common fast-recovery** gas water heater will cost about \$11 per year more for light usage and around \$21 a year more for heavy usage, again compared to off-peak electricity.

Can you help?

MEALS AND DEALS

WHEN a fast-food giant wants to sponsor schools' sports is it the devil in disguise, hoping to brainwash innocent young children into buying more of its product—or is it a generous benefactor providing much-needed facilities at a time when cash is short, thus improving the lot of our schoolchildren?

We will be dealing with this emotive issue in an article early next year and want to know what you think. Does school sponsorship worry you? How important is the role of the parent or teacher in controlling its impact? In the case of food, does it make any difference what the nutritional value of the company's food is? Is there a fundamental conflict of interest?

We'd also like your views on the advertising and marketing of fast foods, both to children and to adults. What images are promoted? What are the messages? Is there anything in them to concern us?

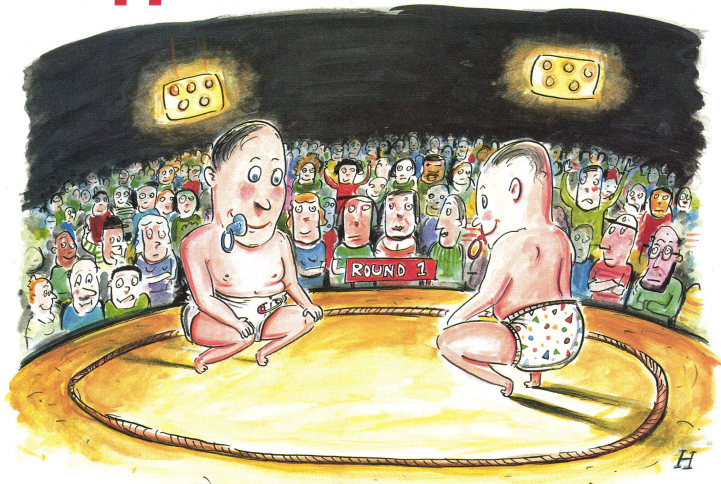
Write, in praise or criticism, to **Fast food**, CHOICE, 57 Carrington Road, Marrickville 2204, by December 1. Please include a daytime telephone number. Thank you.

CALLING ALL EXPERIENCED SKIERS

WE'RE putting together a guide to Australian and New Zealand snow resorts. As part of that we'd like to be able to pass on any bits of wisdom you may have accumulated over the years. Is one resort better than another, and in what way? What unexpected costs can take the inexperienced by surprise? A note about your experiences would be very much appreciated, along with any advice you have to offer.

Write to **Ski Holidays**, CHOICE, 57 Carrington Road, Marrickville 2204. Thank you.

Nappies ~ the real dirt



The full story on cloth and disposable nappies — what people use and why, what it costs them and how the environment pays.

IN THEIR CAMPAIGNS to win sales, nappy manufacturers have had a lot to say about what's good and bad for baby's bottom. We thought it was time to ask the people who really know — the parents and carers who do the everyday work of nappy changing. In a survey distributed through baby health and childcare centres, we quizzed parents on just about every aspect of their experience with nappies and nappy changing.

HUGGIES is the brand of disposables most people think is best, we found — along with why it and other brands are liked and disliked, what people like about cloth nappies, how many they use in a day and how they wash them ... The sum of our survey results may be more details about nappies than many people

want to know. But we also investigated an issue of broader concern: whether cloth nappies or disposables are worse for the environment.

There's no doubt about the popular verdict on this — when it comes to the environment, disposables are villains. In fact the environmental impact of cloth nappies is considerable too. Our efforts to assess the effects of each took us on an epic journey of research, calculation and recalculation, and provide a valuable lesson on the complexities involved in comparing the environmental costs of different products.

Nappy habits

In the US, some 85% of nappies used are disposables; in Sweden and some other

European countries that figure is even higher. In Australia, attachment to the basic cloth nappy is still strong. According to figures from manufacturer Kimberly-Clark, about 45% of the nappies used here are disposables. And of the cloth nappies that make up the remainder, less than 5% are the relatively new fitted type. The great majority are like they always were: 100% cotton toweling, 60 x 60 cm square.

The results of our survey confirm this market breakdown. There were 1230 respondents, each answering in relation to one child (for details on how the survey was carried out see *Our survey*, right). On the day before the survey was answered, those 1230 babies and children went through 7196 nappies, 4384

of them cloth and 2812 disposables. Put another way, just over six in 10 of the nappies used 'yesterday' were cloth and just under four in 10 were disposable.

Some other statistics gleaned from the survey:

- 25% of respondents use cloth always, 22% use disposables always, and 53% use both.

- Of the people using both cloth and disposables, 81% use only cloth when they're at home during the day, while 3% use only disposables.

Once out the front door, though, the situation changes: 52% use disposables in the car, 59% when camping, and 59% when spending nights away from home. Disposables are also favoured for nights spent at home: 51% of respondents put their children to sleep in them, while 40% use cloth (the remainder either used both or didn't answer the question).

- Manufacturers of disposables have worked hard to convince parents of their product's superiority for babies with nappy rash — our survey finds they're not succeeding. A relatively small 20% of respondents use exclusively disposables when their child has nappy rash, compared to 50% who use only cloth.

- Nor are disposables the most popular choice at day care centres. The gap between the two nappy types isn't great — 29% use cloth only and 22% disposables only — but that they lag behind at all seems surprising, given their claim to greater convenience and people's preference for them in other 'away from home' situations.

- The smaller the baby the more likely it is that only cloth nappies are used, and the bigger it is the greater the likelihood only disposables are used.

- On average, the children and babies in our survey had their nappies changed six times every 24 hours. Smaller children were changed more often than bigger ones, and those wearing disposables were changed less often than those wearing cloth.

- Where people live makes a difference. The more isolated the area, the greater the usage of cloth nappies. And the more densely populated the area, the greater the usage of disposables — which, as you'll read later, may be the opposite in both cases of environmental good sense.

Nappy choices

We asked a number of questions about the good and bad points of the different types of nappy. People who use only cloth nappies or only disposables were asked to tell us why, and later on in the survey all respondents were given a

OUR SURVEY

THE QUESTIONNAIRES for our nappy survey were trialled twice at the Redfern Childcare Centre in Sydney before being distributed nationally through baby health and childcare centres in September last year.

Of the 4000 questionnaires distributed, 1230 usable ones were returned — a response rate of 31%.

In each household, the parent or carer was asked to answer the questions on behalf of one child in nappies only (the average number of children in nappies per household was 1.3). The questions covered all details of nappies and nappy use: type of nappy used, reasons for using it, brands used and formerly used, problems experienced, how often nappies are washed, in what kind of washing machine and on what cycle, how they're dried and so on.

The breakdown of responses shows a reasonable representation of the different states (most from NSW and Victoria, least from Tasmania and NT) and different genders (51% of the survey subjects were boys and 49% girls), and gives us confidence in the validity of the sample.

Since our survey was carried out, the major brands of disposables have all been reformulated, with changes made to waist elastic, fastening tabs, absorbent padding and so on. We're presuming that in all cases these changes have improved the final product and that our comments about brand comparison are still valid.

Many thanks to all those who contributed their time and effort to the survey.

checklist of attributes for which they rated the nappies as good or bad.

The respondents who use only cloth nappies gave cost and low impact on the environment as the main reasons why. "Good for nappy rash", "healthier for skin", "a better fit" and "more comfortable" were the other most frequently mentioned advantages. For users of only disposables, the overriding reason was convenience, nominated in various ways — "not time-consuming", "less work", and "no washing", for instance, were all cited along with the simple and all-embracing "more convenient".

The same basic picture emerges from the checklist of attributes, where again cloth nappies rated well for cost and environmental concerns and disposables for convenience. Disposables scored better than cloth nappies for time between changes and appearance. But for perceived comfort the results for the two nappy types were remarkably similar: cloth nappies were rated 'good' by 71% of cloth nappy users and 'bad' by 13%, while disposables got a 76% 'good' vote and a 12% bad.

Separating out people who use one or other nappy type exclusively from those who use a mixture of the two revealed some interesting differences in opinion. For instance, while 52% of the people who use only cloth nappies rated their convenience as 'good', amongst respondents using both types of nappy this figure dropped to 27%. And time between changes, rated as good by 49% of respondents using cloth nappies exclusively, fell to 19% amongst respondents using both.

Essentially, the figures suggest that users of cloth nappies only are likely to be happier with their convenience than those who use both types. And the opposite is also true — people who use just disposables are likely to be more positive about them than people who use cloth nappies as well. Most strikingly, 56% of respondents using disposables exclusively rated their disposal as 'good', a figure which dropped to 29% amongst people using both kinds of nappy. Using a mixture of the two types does seem to be what many people end up most comfortable with.

Disposables — what brand?

Favoured brand of disposables was another topic on which a clear majority view emerged. Some respondents used more than one brand — but overall HUGGIES were used by 49% of them, followed not too closely by PAMPERS (20%), SNUGLERS (15%), COSIES (12%), KLEENEX VIPS (8%) and an assortment of smaller brands and 'no-name' generics.

The major brands of disposables have all been reformulated since our survey, with improvements made to features such as waist elastic, contouring and padding. Nevertheless, HUGGIES remain the market leader — so, what's so good about them? Not the cost — at around \$14 for a pack of 24 medium-size nappies (compared to about \$5 for the equivalent in a 'no-name' brand) they're priced at the very top end of the market. Of the people in our survey who'd stopped using HUGGIES, by far the majority cited cost as the reason why.

SARAH PEIRSE'S first two children wore cloth nappies until they began eating solids. Her third child, Stella, now nine months old, has been a disposables-only baby since birth.

She never really considered using cloth nappies with Stella, Sarah says. Her circumstances have changed since the first two children were small — for instance, they now live in a house with a much smaller washing line — and, in general, “my life has got more chaotic.”

Her brand of choice is **PAMPERS**. They're a leaner fit, she feels, a very good container and seem to stay dry against the skin for longest. If they're not available in the right size when she comes to do her shopping, second choice is **HUGGIES**.

Sarah has always thought there's less nappy rash with disposables — but in the end, the most important factor in her decision to use disposables is their convenience. “It was just a whole lot more labour-intensive having cloth nappies,” she says, “and a whole lot easier having disposables.”

JUDITH FOSTER reckons it takes her only about 20 minutes each day to put the cloth nappies she uses for four-month-old Celeste on to wash, hang them out, bring them in, fold them and put them away.

She used cloth nappies for her first child, Ella, and expects the same nappies to see out Celeste's nappy-wearing years. As Ella did, Celeste wears disposables occasionally — on days out or short holidays — and when she does, they're **HUGGIES**, the only brand Judith uses since buying them for Ella and finding them “fine”.

For everyday use, though, she's happy with cloth nappies. Celeste wears the standard towelling square, done up with a **SNAPPY Nappy fastener** — “You save a lot of time with those, they're much quicker than pins” — with pilchers or fluffies over the top. Judith washes the nappies in cold water and doesn't bother to soak them in a nappy treatment first — the sun does a better job of sterilising them, she feels.

Judith is sure she won't convert to disposables, even once she's back at work. “I don't think they're good for the environment, I don't like the plastic and so on being next to the baby's skin and they're expensive,” she says.

JACKIE LACEY'S 17-month-old son Carlin wears disposables to day care and at night, and cloth nappies the rest of the time. And it seems to suit Carlin's bottom well — he gets nappy rash if he wears exclusively cloth nappies or disposables, Jackie says, but not if he wears a mixture of the two.

She uses disposables for Carlin at night because they don't leak, and at day care because they're lighter, not as bulky in the bag and “it's just more convenient than dragging dirty nappies home”. Brand of choice is **HUGGIES**, bought because — unlike several other brands Jackie's tried — they don't leak and the tapes stay fastened. So, why not use disposables all the time?

“Because I don't like them, really,” she says — “they're difficult to dispose of, they're really bleached and if you leave a baby in one for too long they inevitably get nappy rash.”

Jackie uses standard square cloth nappies done up with a **SNAPPY Nappy fastener**, a liner inside and pilchers over the top. The nappies were given to her when Carlin was born, and she's never thought about using fitted nappies instead — “I've never got that experimental,” she says, “I've just always been happy with the old squares.”



The amount of money spent promoting them is probably a factor in their popularity — according to industry figures, some \$2.8 million went on advertising **HUGGIES** in 1991-92 in Australia, compared to around \$1.8 million spent on main competitor **PAMPERS**. But they're also a good product. Asked to give reasons for changing brands, respondents to our survey had fewer complaints about **HUGGIES** than any other brand.

A spokesperson for **HUGGIES** manufacturer Kimberly-Clark attributes the brand's success to its ‘stay dry’ liner, the design of its absorbent gel (where it's placed in the nappy and at what thickness) and a good fit at leg and waist — though our survey didn't altogether bear this out. And he points to figures which demonstrate, he says, a willingness to pay premium prices for a premium product: while the market for disposables is growing at about 8% each year, the growth in sales of **HUGGIES** is twice that.

According to our survey, though, about three quarters of disposable nappy users have tried and discarded at least one other brand. That's a level of experimentation which suggests manufacturers have some way to go in getting the cost/performance equation of their products exactly right. And until they do, disposables are likely to only slowly erode the following retained by cloth nappies.

Cloth nappies — what sort?

Judging from our survey results, cloth nappy users are traditionalists. Though a number of new cloth nappy products have come on the market in recent years, they're yet to find widespread popularity. Most of our survey respondents use the basic cloth square done up with safety pins and covered in some sort of protective overpant. Only 20% have discovered the advantages of the **SNAPPY Nappy fastener** (a plastic claw-like fastening device which converts swear by) and only 5% use fitted cloth nappies.

Fitted cloth nappies are shaped much like a disposable, with elastic at the legs and waist and, usually, Velcro tabs for fastening. They generally feature some form of absorbent padding, may be adjustable in size and may be available in several choices of exterior fabric and colour.

There's a range of brands on the market — sold through some pharmacies, baby shops, department stores and by mail order — offering variations on the theme. At their best they're easy to get on and off, provide good containment and are a neater, less bulky fit than the stand-

ard square nappy. At between \$7 and \$20 each they're a lot more expensive than the basic squares, which cost around \$25 per dozen. But for people who don't want or can't afford to use disposables yet like the convenience they offer, and for people who've never managed to get really competent with ordinary nappies, the advantages of fitted nappies could be worth paying for.

Another way of bridging the convenience gap between disposables and cloth nappies is to use a nappy service. This hands-off way of laundering nappies involves paying a weekly fee to have soiled nappies collected and clean ones delivered. No rinsing, no scraping — all you have to do is store the used nappies until collection day (once or more weekly) in a bucket that's usually provided. Nappy services cost anywhere between \$16 and \$27 a week (at least initially) depending on the number of nappies you use (generally around 60 to 70 a week), where you live (our survey of prices found nappy services in Perth to be cheaper than those on the east coast) and how long you use the service for (some offer a discount for long-term customers which can reduce the weekly cost considerably).

As with fitted nappies, though, nappy services are yet to find widespread popularity, amongst our survey respondents at least. Of those who use cloth nappies, only about 4% always use a nappy service, while around 8% sometimes do — that's compared to 57% who wash a load of nappies daily and 35% who do a wash every second day. Perhaps the price is just too high for most people — or perhaps it needs to be more generally known that nappy services can be good not only for whoever does the laundry but for the environment as well.



The Snappy Nappy fastener — converts swear by it as an alternative to safety pins.

Nappies and the environment

ECONOMIES OF SCALE mean that, generally speaking, nappy services are better for the environment than home laundering — and that's about the closest we came to a definitive answer on the subject of nappies and the environment. We wanted to answer the big one: are disposables or cloth nappies better for the environment? But it quickly became clear that depending on what you feed into the equation, different conclusions emerge.

The starting point for our research was three nappy lifecycle analyses, all from the US. To these we added information gathered in our survey about what people in Australia do with their nappies — how often they wash them, and how, and how they dispose of their disposables, for instance.

A lifecycle analysis (LCA) examines the environmental impact of a product from 'cradle to grave' — in other words, from preproduction and production through distribution and use to disposal. In any LCA the factors used to assess a product's environmental impact generally include the consumption of raw materials, water and energy consumption, water and air emissions (pollution) and the solid waste produced.

With cloth nappies, this means assessing the impact of cotton production and processing, of making the nappy and the products that go with it (pins, pilchers and so on) and of using the nappy (the detergents and other laundry products used to wash the nappies, and the actual washing and drying process). With disposables, it involves looking at the production and processing of pulp and plastics, the manufacture of the nappy (including elastic, super-absorbent gel and adhesive tapes), and disposal. For both kinds of nappy, the impact of transportation and packaging — of the nappy itself and its various components — also needs to be examined. And that's a far from complete list.

LCAs are a response to the need to accurately gauge the environmental impact of products. At this relatively early stage of their development, though, they provide only a flawed tool for doing so. The three we looked at offer a good demonstration of the problems involved, both in terms of what they found and how they found it (for more on this see *Say LCA and pick your lucky number* overleaf).

We struck our first complication just

about immediately, when we found the three LCAs make very different assumptions about patterns of nappy use. For instance:

■ How many times is a cloth nappy reused? Depending on which LCA you read, either 90, 190 or somewhere in between.

■ How often are cloth nappies changed compared with disposables? Again, it depends what you read. According to one LCA, 1.9 cloth nappies are used for every one disposable. Another LCA puts forward a ratio of 1.79 cloth nappies for each disposable used, and the third says 1.72.

■ How often are faeces in disposables flushed down the toilet? Never, one report assumed — in 50% of cases, said another; 5% of the time, said the third.

Next, we found the three LCAs include different factors in their assessments. Astonishingly, one didn't consider the raw materials used; the other two did. Two ignored the impacts of detergent, fertiliser and pesticide manufacturing, another left out all primary packaging of the finished product. And not only that — even where they examine the same thing, they're likely to measure it differently. Water consumption is one example: the three reports make different assumptions about the number of cloth nappies used per day, how often cloth nappies are reused and how often faeces are flushed down the toilet. They disagree about how people wash and dry their nappies and whether net or gross water consumption figures are the right ones to use (with disposables, some water is recycled during manufacture; with cloth nappies, some washing machines recycle the wash water). So it's unsurprising that the three reports come up with very different assessments of overall water consumption.

As well, in all three reports the environmental sums are done using a different basic unit of measurement. One report took as its basic unit of calculation the environmental impact of a week's worth of nappies (estimated as 45 disposables and 85 cloth), another that of six months' worth of nappies (actual numbers of nappies not provided) and the third looked at the impact of 1000 nappies of each type. These variations make it hard if not impossible to compare the findings of the three reports in any meaningful way.

Despite all these problems, the three

studies do contain much information that's useful, particularly about what kind of environmental impact the different nappies have and at what stage of the lifecycle. For instance, one of the LCAs put forward the following calculations:

- With disposables, most — about 86% — of the energy consumption occurs during production of the individual materials for manufacture. With cloth nappies, laundering eats up most of the energy used — some 80% in the case of commercially laundered nappies, and almost 98% for nappies laundered at home.

- Cotton growing and laundering accounts for most of the water consumed by cloth nappies, and manufacture for that consumed by disposables. Flushing the toilet to rinse soiled nappies pushes up the water consumption of home-laundered nappies compared to those washed commercially.

- With water and air pollution, economies of scale mean that commercial laundering is probably less environmentally

damaging than washing nappies at home. Laundering and flushing account for most of a home-washed cloth nappy's water emissions. Though toilet flushing is an issue with disposables as well (just under half of our survey respondents said they flushed a disposable's contents down the toilet), the waste waters are produced mainly during the manufacture of paper and plastics. Whatever the quantities, they're likely to be more noxious and less readily treated than the water emissions produced by cloth nappies.

Solid waste is the only issue on which the three LCAs agree — disposables produce more. Most obviously, there's the product itself and its packaging. The manufacture of pulp, paper and plastics for disposables also produces wastes — in small volumes but because of their nature (solvents, heavy metals, dioxins and so on) with a potentially high environmental impact.

With cloth nappies most of the solid waste is fibre and dirt from cotton pro-

duction. More noxious are the wastes that result from the production and use of chemical fertilisers and pesticides to grow the cotton.

The significance of these different impacts and how they add up depends to a great extent on local conditions. In the Netherlands, high population density and scarce landfill persuaded the Dutch consumer magazine to advise readers against using disposables. On the other hand, *The New York Times* recently pointed to some states in the US where drought conditions and ample landfill space make disposables seem the more appropriate option.

Cloth nappies do have the edge environmentally for at least one reason: because their most significant environmental impact comes at the laundering stage of their life, users of cloth nappies can modify the way they wash them to minimise that impact.

According to our survey there's a lot of over-washing going on. Most people first soak the nappies in some kind of

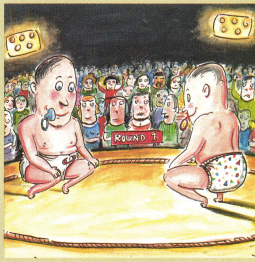
SAY LCA AND PICK YOUR LUCKY NUMBER

GIVEN the sheer quantity of numbers they contain, it's hard not to feel the three lifecycle analyses we looked at should tell us more than they do. The reason they don't is partly because they can't — existing LCA methodology isn't up to it — and partly because a lot of the numbers provided are rather rubbery.

In wondering why this has escaped the scrutiny of the experts who prepared the reports, it's hard to get past the fact that each of the studies is funded by an industry body. Two have an interest in disposables (major manufacturer Procter & Gamble and the American Paper Institute (API) Diaper Manufacturers Group) and the third an interest in cloth nappies, specifically commercial laundering (the National Association of Diaper Services, or NADS). The only definitive thing we can say about these LCAs is that in various ways each study favours the case of its sponsor.

It's a tendency that turns up first of all in the assumptions made about nappy use and the factors chosen for analysis — the NADS LCA leaves out the impact of detergents, for example, while the Procter & Gamble one almost doubles the impact of cloth nappies by assuming that in a day nearly twice as many cloth nappies are used as disposables.

In the end one of the reports concludes that disposables consume more raw materials and generate more post-consumer waste, while cloth nappies consume more energy and water and produce greater quantities of air and water pollutants. The second finds that disposables have a greater overall impact when all factors are considered. And the third assembles a great deal of data but doesn't reach any overall conclusion at all.



These findings highlight another problem with the LCAs. Is the greater volume of water and air emissions produced by cloth nappies worse for the environment than the smaller quantity produced by disposables? The LCAs provide measurements but no mechanism for assessing the environmental or health effects of the emissions. Where they result in large volumes of a relatively diluted and low-toxicity substance being compared to small volumes of one that's highly concentrated and very toxic, that's a serious shortcoming.

This lack of qualitative assessment is also what makes it just about impossible to take the leap from analysing the environmental impact of a single product

to comparing the different impacts of different products — such as cloth and disposable nappies. To compare different products a series of judgments has to be made which rates various environmental impacts in some sort of hierarchy of significance. Which is worse, a tonne of solid waste or a million gallons of waste water? Ten pounds of nitrogen oxides or 1500 parts per million of hydrocarbons?

The methodologies for carrying out LCAs will become more refined over time and no doubt some of these problems will be dealt with. But there will always be interest groups prepared to have a go at bending the truth, and experts of one kind or another willing to help them do it. In the absence of strong regulatory protection, consumers need to maintain their scepticism of environmental claims — especially those which come with the numbers to prove it.

nappy treatment (NAPISAN was by far the most popular brand) and then wash them on a full wash cycle with detergent; just over half use a softener as well. That's overkill — generally, if you've used a nappy treatment, the instructions advise that all you have to do is put the nappies through a rinse cycle with no detergent. Using cold water for rinsing instead of warm or hot and the washing line instead of a dryer also helps (in fact most of our respondents hadn't used a dryer for the last wash they'd done).

With disposables, there's much less consumers can do. Instead, it's really up to manufacturers — and, according to Kimberly-Clark, they're working on it. Disposables have already been reduced in bulk (by almost 45% in some cases) and further reductions are on the way. Other options being explored at the moment include composting, flushable materials (a special formulation of fibres

and binders means the nappy stays together in use and then disintegrates when flushed down the toilet) strippable backings and alternatives to plastics.

Cost — the final factor

In the end, as our survey showed, the environment is just one of several factors people consider when deciding what kind of nappy to use. Cost is another key issue and, for many, the decisive one. Using cloth nappies and washing them at home is obviously the cheapest way of doing things — see *Some cost comparisons* below for details.

In conclusion ...

Nappies have taken on an extra dimension in recent times, one that extends well beyond their function. As a focus for arguments about conservation versus convenience, they've become something of an emotional trigger: if cloth nappies

nowadays set off images like wholesome, clean and even better parenting, attached to disposables are tags like plastic, throwaway, unclean and uncaring.

It's a hard image to beat but perhaps it's not as strong as it seems: according to Kimberly-Clark disposables have done well in the relatively short time they've been on the Australian market (the first Kimberly-Clark brand was launched in 1973) and the company is quietly confident about reaching its target of 80% market penetration.

Cloth nappies, meanwhile, aren't yet ready to be branded an anomaly in this convenience age. With cost and some environmental pluses on their side, they're putting up a strong resistance. The good news for consumers is they stand to benefit whatever kind of nappy they use, as disposables are forced to upgrade their environmental performance and cloth nappies their convenience. □

Some cost comparisons

Cleaning method (in ascending order of cost over 2½ years)		Wash temperature	Dryer temperature	Detergent	Weekly cost* (\$)	Cost over 2½ years (\$)
Home laundering	Scenario 1	Warm soak in Napisan, cold machine rinse	Not used	Not used	3.00	390
	Scenario 2	Cold	Not used	Surf	4.00	520
	Scenario 3	Cold	Warm	Surf	4.50	585
	Scenario 4	Cold	Not used	Drive	4.50	585
	Scenario 5	Warm	Not used	Surf	4.50	585
	Scenario 6	Cold	Hot	Surf	5.50	715
	Scenario 7	Warm	Hot	Drive	6.50	845
Disposables		Not applicable	Not applicable	Not applicable	8.50 / 23.50 (A)	1105 / 3055 (A)
Nappy services		Not applicable	Not applicable	Not applicable	16.50 / 23.50 (B)	2145 / 3055 (B)

* To nearest 50 cents.

(A) Lowest cost: 'no-name' (generic) brand; highest cost: Huggies, based on using an average of six disposables per day including flushing.

(B) Lowest cost: Perth; highest cost: Queensland. Neither price includes extras such as pilchers, pins, etc.

All the home laundering scenarios are based on washing nine nappies every day as a half-load in a top-loading machine. When water is heated, it's using an off-peak electric water system; gas heating would cost about the same, whereas using an electric continuous-storage water heater would cost considerably more. The cost of buying three dozen nappies, of soaking them in Napisan and warm water and flushing one in three in the toilet is also included. Extras such as pilchers, pins, etc. are not. Water and electricity rates were taken as an average of those in all state capitals.

For **Scenario 1** we followed the instructions for using Napisan: after soaking just run the nappies through your washing machine's rinse cycle in cold water, and hang them on the line.

Some conclusions

There are many other possible washing/drying scenarios, but those given as examples above are sufficient to make the following points:

- Using only a nappy treatment and a cold rinse not only saves energy and water but cuts costs too.
- With other home laundering scenarios there are cheap and not-so-cheap ways to go. Washing with warm water and a more

expensive detergent and using a dryer on 'hot' is \$2.50 more expensive each week than a no-frills approach (cold wash, cheaper detergent and no dryer) — over 2½ years that adds up to a substantial \$325 difference (compare **Scenarios 2** and **7**).

■ What detergent you use makes a significant difference to the cost. Using a more expensive detergent (Drive as opposed to the cheaper Surf in our scenarios) can add around \$65 to your bill over 2½ years, all other factors being the same (compare **Scenarios 2** and **4**). Drive and Surf both performed well in our tests of detergent (CHOICE, March 1993), but you can reduce costs even more by using a still cheaper detergent if you're satisfied with its cleaning performance.

■ Whether or not you use a dryer and at what temperature is also significant. Our calculations found that if you don't use a dryer at all you'll end up paying \$195 less than if you use it on 'hot' and \$65 less than if you use it on 'warm' — that's assuming the dryer is used for an hour each day for 2½ years (compare **Scenarios 2, 3** and **6**).

■ The temperature of the water you wash in is the other major factor in costs — washing in warm rather than cold water adds \$65 to your costs over 2½ years, we found (**Scenarios 2** and **5**).

Refinancing your home mortgage: when to jump?



*There are lots of home mortgage deals to tempt you out of your existing loan.
Here's a guide to help you decide whether to sit, jump or hunt further.*

FOR MOST CONSUMERS it's an impossible task to do the calculations necessary to know whether they're better off dumping their current home loan and taking out a new one. There are so many deals, and they can't be compared easily.

Here we'll prepare you to get the information you'll need, and then show you a rule of thumb to let you screen new deals to see whether they offer a genuine improvement on what you've got already. At that point you may want to get an accountant to look more closely.

Up-front payments

A housing loan is a bundle of factors and costs. An increase or decrease in any one factor will affect the cost of the deal to you. An obvious variable is the interest rate — that's the traditional tag used by the banks to woo customers. Another is "No up-front fees".

But there's much more to it. Here's a list of payments you may be asked to

make to your proposed new lender:

- **Establishment fees:** The administration costs (and initial profit) of the financial institution, for time spent considering your application and arranging documentation.

- **Valuation fees:** Confirming the value of the property. Frequently these are included in the establishment fee.

- **Mortgage guarantee insurance:** You may be required to insure your loan repayments: see below.

When financial institutions quote an up-front figure for their deals they usually leave out two charges: government fees, and costs you would incur by using a lawyer or conveyancer if required. They may charge you extra for their own legal expenses. In many refinancing transactions you won't need a lawyer or conveyancer, but you can't avoid government taxes and fees.

Government taxes and fees

The state government gets a hand into

your refinancing pocket at several points during the transaction. There are registration fees on the discharge of the old mortgage and on registration of the new one, and stamp duty based on the amount borrowed.

Precise figures change from state to state but, by way of example, on a loan of \$100 000 you could expect to pay stamp duty of between nil (NT) and \$364 (Victoria), and registration fees of between \$100 (NSW) and \$180 (NT).

Mortgage guarantee insurance

If you've borrowed more than 80% of the value of your home (the loan-to-valuation ratio) a condition of the loan may be that you take out mortgage guarantee insurance.

Understand clearly this insurance doesn't protect the borrower: if the borrower defaults on the loan, the home is sold and any shortfall is paid to the lender by the insurer. The insurer is then free to sue the borrower to recover this amount.

HONEYMOON PERIODS — WHAT MAKES A DIFFERENCE?

THIS time we're looking at how fees you'll pay to change loans can offset any potential advantage gained by a reduction in interest rate during a honeymoon period, if at the end of this period you'll be paying the same interest rate as with your present loan. These graphs allow you to calculate whether you'll be better or worse off by changing to a new loan, using four common scenarios — look at the graph most closely approaching your own changeover situation.

How to use the graphs

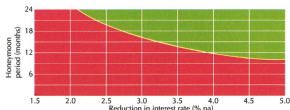
The vertical axis shows the number of months of a honeymoon period; the horizontal axis shows the reduction in interest rate from your present loan. All you have to do is find the point at which, using the figures which apply to your situation, lines drawn from the time period and the rate reduction meet. If this meeting point is in the green area it means you're likely to be better off to refinance your loan than stay where you are. If the point is in the red area, don't refinance.

For example, if your loan is for \$70 000 at a current interest of 8.75%, and the loan you're considering is offering a rate of 6.75% for the first 12 months but will cost you \$2500 in fees, go to graph 1 and draw a line out from '12 months' on the vertical axis and up from '2%' on the horizontal axis. They meet in the red area, which means you shouldn't think of refinancing.

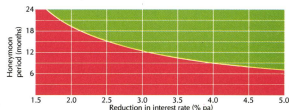
The graphs are based on the assumption that we are looking back at the results of a refinance and asking if it has been financially worthwhile. There are many possible variables in creating a refinancing scenario so, for the purpose of these examples, we are looking at the results of a 10-year mortgage history: where you refinanced your home loan after four years of the original term had elapsed and are now looking back after six years with the new loan.

Bear in mind this is a general guide only — to help you sort the very beneficial deals from the marginal or poor ones. You should get personalised advice before refinancing.

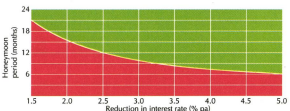
1. \$70 000 loan, \$2500 fees



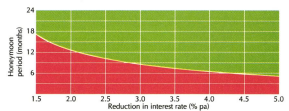
3. \$100 000 loan, \$2500 fees



2. \$70 000 loan, \$1600 fees



4. \$100 000 loan, \$1600 fees



Exit penalties

There may be a penalty for getting out of your existing loan before it's due to end. It's not uncommon to see penalties of the order of one extra month's loan repayment, though it can be much more. People with fixed-rate or finance company loans, in particular, should watch this. If you have exit penalties add them to the establishment cost of your new loan.

Interest rates

There are three types of interest rate we're interested in: variable, fixed and 'honeymoon'.

■ **Variable:** This is the typical home loan formula. The interest rate changes during the term of the loan according to market conditions and the cost of borrowing. Five years ago we were paying 17% per year for our home loans. Now it's around 8.75%.

■ **Fixed:** It's possible to get a loan where

the interest rate is fixed and will not vary for the full term of the loan (generally three to five years). This deal may be good when interest rates are rising, but disastrous when they're falling. There may be fresh costs each time you extend the loan.

■ **Honeymoon:** This is where there's a low interest rate (say 6.95% per year) for a short, initial period (the first six or 12 months), after which your loan returns to the institution's variable rate.

The rule of thumb

Using refinancing costs and interest rates from the leading banks and building societies we've created a refinancing 'break-even' chart and four 'honeymoon' graphs.

The chart (see *When should you refinance your home loan?* on page 13) gives a guide to the conditions under which refinancing should put you ahead. You

can see there are several variables which interact to define the deal.

The four graphs (see *Honeymoon periods — what makes a difference?*, above) narrow the discussion to the situation where there is no long-term reduction in interest rates. Basically, you want to find a deal which, when plotted as a point on the appropriate graph, is in the green section, above the line of the curve.

In summary:

■ It's very unlikely to be worth switching to a loan with the same final interest rate (pa) as you're paying now, even with a honeymoon period of six to 12 months at a lower rate. The changeover fees are sufficient to take the attractiveness out of a honeymoon period.

■ If instead of switching to a new loan you paid the equivalent in changeover fees off your existing loan principal, you might find you'd be better off staying put!

■ You only reap a real benefit from any

honeymoon interest rate if you keep making the same repayments as with your old loan. If you lower the repayments to match the interest rate the changeover fees will eat up any benefit.

■ Fees have a bigger long-term impact on a smaller loan, so you'll be more likely to end up worse off than with a higher loan (see the graphs, left).

Note that our figures and conclusions remain the same for variable and fixed-interest loans, as our calculations assume the interest rates remain constant (for the full term — up to 25 years).

Conclusion

Refinancing is a balancing act. The balls are in the air and all must be considered and anticipated for a successful juggle. The basic message is not to be led too far by a single variable, whether it's zero up-front fees or a honeymoon interest rate. It costs the banks, building societies and credit unions much the same amount to get funds, so it stands to reason their deals will boil down to much the same cost in the end.

At present the honeymoon period loans are not worth switching to without a significant drop in the interest rate after the honeymoon period as well; the advantage is eaten up by costs and fees.

Look for a lender with the lowest variable interest rate after any honeymoon period. The range at the time we went to press was from 8.75% pa to 7.04% pa (GIO's Asset Accumulation — with annual fees of \$660). Of course the market leader may change position many times over the course of a 25-year loan, but even a few years with a market-leading interest rate will cut worthwhile chunks off your interest bill. □

REFINANCING CHECKLIST

Ask your proposed lender to quote on these:

- Establishment fees.
- Valuation fees.
- Interest rate both during and after any honeymoon period
- Any additional legal expenses.
- Stamp duty.
- Registration fees registering the discharged and new mortgages.
- Premium for mortgage guarantee insurance, if it's a condition of the loan.
- Whether new inquiry certificates (such as rate notices, council zoning certificates, etc) will be required, and, if so, what they will cost to obtain.

Check for exit penalties charged by your existing lender.

The 10th CHOICE Subscriber Draw

For new subscriptions and renewals received October 1 to December 31, 1993.

Subscriber draws are now held quarterly and on January 4 we'll be holding our tenth. The lucky winner will be able to choose any two products from the following tests published April 1993 to June 1993.

- ☐ Portable TVs (April 1993)
- ☐ Flued gas heaters (April 1993)
- ☐ Sewing machines (April 1993)
- ☐ Shampoo vacuum cleaners (May 1993)
- ☐ Frost-free refrigerators (May 1993)
- ☐ Electric wall ovens (June 1993)

These are products we bought for testing, so you won't be the first to turn them on or set them up. But we'll cover any service problems with a CHOICE warranty that'll match the manufacturers' — just as if you'd bought them new.

All new CHOICE subscriptions and renewals received from members and personal subscribers (including donors of gift subscriptions) by December 31 will go into the draw, unless of course you indicate you don't want to be included.

(If you're not due to renew your subscription during the period, don't worry, we'll be holding other draws during the year — your renewal notice will have the details. And if you're on a two-year subscription you'll be entered on your first anniversary as well as when you renew again.)

CHOICE subscriber draw winner

The winner of the eighth CHOICE subscriber draw is Peter Downie of West Brunswick, Victoria. Peter chose the TP notebook computer and Sanyo reverse-cycle air conditioner as his prizes.

The computer was already being put to excellent use at the beginning of September. Peter had lent it to one of his junior colleagues who was studying for his VCE (Victorian Certificate of Education). Peter is also intending to use the computer as a tool in his own studies — he is currently completing a graduate diploma in computer studies.

He is still deciding on the best way to install the reverse-cycle air conditioner but is confident it will be running in time for summer.

As a subscriber since 1987, Peter relies on CHOICE to keep up with current consumer issues and make better-informed choices when purchasing new products.

"I've always made purchases based on the information in CHOICE, and I've always found the products I buy perform as reported," he says.

Use the order form overleaf

CONDITIONS OF ENTRY

1. The winner will be drawn from new subscriptions and renewals from personal subscribers (including members and donors of gift subscriptions) received October 1 to December 31, 1993. If you opt for a 2-year subscription, you'll be entered on your first anniversary as well as when you actually renew or subscribe.
2. Information on how to enter and prizes forms part of these conditions of entry.
3. Employees, and their immediate families, of the Australian Consumers' Association and its associated companies and agencies are ineligible to enter.
4. Entrants must be residents of Australia.
5. Applications are subject to a verification check and judge's decision is final. No correspondence will be entered into.
6. The prizes will be delivered free anywhere within Australia.
7. Prizes cannot be taken as cash.
8. South Australian residents may enter the draw by completing the form and posting to: Reply Paid No. 13, ACA, 57 Carrington Road, Marrickville 2204, without subscribing to the magazine. Only one entry per person is permissible through this method.
9. Last date for receipt of entries to the draw is December 31, 1993. No responsibility accepted for lost, late or misdirected mail.
10. The draw will be conducted at the office of the Consumers' Association at 10 am on January 4, 1994.
11. The winner will be notified by letter and published in the March 1994 issue of CHOICE magazine.
12. The promoter is Australian Consumers' Association, 57 Carrington Road, Marrickville 2204. NSW Permit No. TC93/3740, Vic Raffles & Bingo Permits Board Permit No. 93/2426 issued on 23/8/93, ACT Permit No. TP93/1430 issued under the Lotteries Ordinance, NT No. NT93/1131.

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CHOICE operates consumer rights lines for people having problems with a faulty product or a dispute with a service person. The lines set out what your basic rights are and what steps you can take to protect them. These lines are also available in four languages other than English — Vietnamese, Arabic, Chinese and Turkish.

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A line specifically for young consumers, the 'Ripped-off' Line, outlines your shopping rights as well as letting you know what you can do if you run into problems with something you have bought.

Students can also call a resource line to find out where to get up-to-date information on the consumer movement and the environment. These two topics are the most requested by students and teachers who ring our Consumer Information Service.

CHOICE 'Ripped-off' Line — Advice for

Young Consumers: 0055 20007

CHOICE Student Resource Guide: 0055 20012

Product advice

A number of product lines also summarise what to look for when you are buying a particular product. Brand-name recommendations aren't included, however — these remain exclusive to CHOICE subscribers.

CHOICE Washing Machine Advice:

0055 20013

CHOICE Water Filter Advice: 0055 20014

CHOICE Baby Products Advice: 0055 20015

CHOICE Safer Domestic

Pest Control Advice: 0055 20016

Calls attract a rate of 55 cents per minute.

DISHWASHERS UPDATE

Some popular models are not recommended because they don't wash well enough.

WHEN WE WERE testing dishwashers for our February 1993 report, Vulcan told us it would be changing its DISHLEX models before we published, so we didn't include them. Since that brand has such a large share of the dishwasher market we've now done an update, comparing three DISHLEX models with the dishwashers we tested previously.

For the full story on the models we tested last time — which included all those selling for less than \$2000 that could fit at least 12 place settings — see CHOICE, February 1993.

None of the three models tested this time can be recommended. They performed worse overall than all the dishwashers tested last time for energy effi-

ciency, drying performance and soil removal (washing performance).

Vulcan disputed our results for the washing performance tests. Our test method is to follow the manufacturer's instructions and use the recommended dose of detergent for a normally soiled load of dishes. For these models this was 'one heaped tablespoon', which we measured as 20 g of detergent. According to Vulcan, this should have been 25 g, and it also felt we should be using the larger dose recommended for heavily soiled dishes: 25 g plus an extra 25 g in the prewash cycle. We retested its three models using several larger doses, and got varied results — sometimes scoring better than the initial test, sometimes worse, but always lower than the dishwashers we tested in February.

We believe the reason these machines scored poorly for washing is not related to the amount of detergent used, but to inadequate filters: the machines removed the soil but poor filtering meant some was redeposited on the dishes. It's also

worth noting that if you did use the 50 g dose recommended by Vulcan you would spend something like an extra \$35 on detergent over a year if you ran the machine once a day.

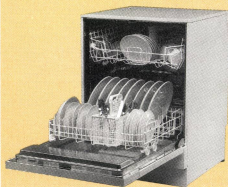
The results given in the table overleaf are those for our first tests using doses appropriate for normally soiled loads. This is how we tested the models reported on in February and, for the results of these latest models to be comparable with those, they must be tested in exactly the same way.

WHAT TO BUY

MIELE G 572	\$1449
AEG Favorit 675	\$1250
KLEENMAID DW-2	\$1299
ASKO ASEA 1403-262	\$1400
equal BLANCO BIDW 60	\$1600
BOSCH SMS 5012	\$1150
SMEG LA 40	\$1295
BOSCH SMS7062	\$1700
OMEGA DW 1407-2	\$1099
SIMPSON 880M	\$850

PROFILES

Prices shown are a good target to aim for when shopping around, based on nationwide checks in September 1993. Anything lower is a bargain.



VULCAN DISHLEX GRANGE

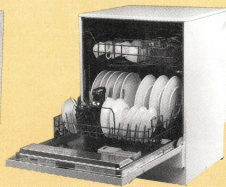
Target price: \$750

Good points

- Good controls

Bad points

- Worst for energy efficiency.
- Uses an excessive amount of water.
- Mediocre washing performance.
- Very difficult to fill rinse aid container without spilling small amounts. This resulted in foam spilling from the front of the door, which suggests seal is inadequate.
- Door difficult to open.



VULCAN DISHLEX MILANO

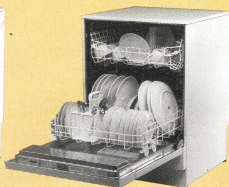
Target price: \$1050

Good points

- Good controls.
- Best score for ease of use.

Bad points

- Poor washing performance.
- Among the worst for energy efficiency.
- Very difficult to fill rinse aid container without spilling small amounts. This resulted in foam spilling from the front of the door, which suggests seal is inadequate.



VULCAN DISHLEX 500 ECO

Target price: \$939

Bad points

- Poor washing performance.
- Worst for drying.
- Among the worst for energy efficiency.

Dishwashers

1

2

3

4

5

equal

Brand/model (in rank order)	Manufacturer/ distributor	Origin	Target price* (\$)	Warranty (years)	Type	Dimensions HxWxD (mm)	Place settings	Water connection	Delayed wash start	Inlet safety valve	Overflow protection
MIELE G 572	Miele	Germany	1449	1	FW	850x590x570	12	H or C		✓	✓
AEG Favorit 675	Andi Co	Germany	1250	3	FW	860x590x560	12	H or C		✓	✓
KLEENMAID DW-2	Kleenmaid	France	1299	3/20 (A)	FW	850x595x570	12	H or C		✓	✓
ASKO ASEA 1403-262	Cylinda	Sweden	1400	2/10 (B)	B	820x590x570	14	H or C			✓
BLANCO BIDW 60	Luft	Germany	1600	1 (C)	I	820x595x550	12	H or C		✓	✓
BOSCH SMS 5012	Robert Bosch	Germany	1150	1	FW	850x560x565	12	Cold			✓
SMEG LA 40	Omega Appliances	Italy	1295	2	FW	860x595x565	14	H or C			✓
BOSCH SMS 7062	Robert Bosch	Germany	1700	1	FW (D)	850x590x565	12	H or C		✓	✓
OMEGA DW 1407-2	Omega Appliances	Italy	1099	2	FW	855x600x595	12	H or C			✓
SIMPSON 880M	Email	Australia	850	1	M (E)	875x590x650	14	H or C			✓
NOT RECOMMENDED											
ROSIERES LVI 300	Rosieres Australia	Italy	2050	2	I	820x590x545	12	H or C			✓
VULCAN DISHLEX Grange	Vulcan	Australia	750	2	FW	830x600x625	15	H or C			✓
VULCAN DISHLEX Milano	Vulcan	Australia	1050	2	FW	830x600x610	14	H or C	✓	✓	✓
VULCAN DISHLEX 500 Eco	Vulcan	Australia	939	2	FW	830x600x600	15	H or C	✓	✓	✓

* Prices shown are a good target to aim for when shopping around, based on nationwide checks in September 1993.

(A) Three years for machine, 20 years for stainless steel liner.

(B) Two years for machine, 10 years for stainless steel liner.

(C) Warranty stated for UK but distributor confirms it applies in Australia.

(D) Integrated model also available; ask for SMI 7062.

(E) Also available as a built-in; ask for 880B

Similar models

■ The AEG Favorit 875 freestanding and integrated models (see **Type**, right, for an explanation of these terms) are technically comparable to the AEG Favorit 675 tested, but they have more programs, LED indicators, a 19-hour delay start time facility and pushbuttons rather than knobs.

■ Models technically the same as the SIMPSON 880 models are: SIMPSON 860, CONCORDE 862, CONTESSA 864, RIVIERA 866 and 868B and WESTINGHOUSE Silhouette 904B.

■ Models technically comparable to the ASKO ASEA 1403 tested are the ASKO ASEA 1253 and the ASKO ASEA 1503. All have the same normal wash but differ slightly in the selection of other programs. The 1253 has a manual timer, is noisier and has fewer features than the other two. The 1403 has rotary knob electronic controls, whereas the 1503 has pushbutton electronics and an inside light.

■ The VULCAN DISHLEX Eco 750 and Eco 1000 are technically comparable to the Eco 500 tested but have extra features. The Eco 750 has a delayed start action and an integrated hose and bowl. The Eco 1000 has extra options (delayed start, extra hot, extra dry and plate warming) plus dual water connections.

1 Type

B — Built-in: must be installed under a kitchen bench but doesn't require special decor panels.

F — Freestanding without worktop.

FW — Freestanding with worktop

I — Integrated: designed to be permanently installed under a kitchen worktop; normally supplied without base panels, decor panels or worktop, to enable you to colour co-ordinate with your kitchen.

M — Mobile: you wheel it up to the sink and attach the hose to a mixer tap each time you use it, rather than it being plumbed in. Check the hose connection when you buy — you may need to modify your tap(s) to fit.

2 Water connection

H or C — You can use either hot or cold water.

Cold — Cold connection only; the machine heats the water it needs.

Arguments for having the option to use hot water:

■ Allows shorter program time and is promoted by manufacturers such as Vulcan to make best use of fast wash programs.

■ Enables you to use water heated by cheaper off-peak electricity, gas or solar power.

■ Better loosening of greasy residues with a hot prewash.

■ More effective odour elimination with a hot rinse.

Arguments against the use of hot water:

■ Using cold water reduces energy consumption because the machine heats only the amount of water needed and doesn't use hot water for rinsing.

■ Hot water may bake on protein-based foods.

■ Some dishwashers may be damaged or have reduced life by connection to excessively hot water. As a precaution don't use water over 60°C (some solar and off-peak electricity systems run hotter than this).

3 Delayed wash start

Enables the user to program the machine to start at a particular time — useful to take advantage of off-peak electricity or solar heating or if you want to be asleep or out of the house while the machine is working.

4 Inlet safety valve

Mounted on the hose, this cuts off the water at the water inlet point if the hose bursts, for example, so the water supply is automatically cut off.

5 Overflow protection

This anti-flood device protects the machine from overflowing. Only the AEG and ASKO ASEA note this in their instruction booklet; in the other cases it was a manufacturer's claim to us.

	6	7	8	9	10	11	12		
(minutes)	Running costs (\$ per 10 years)	Noise (dB)	Washing score (%)	Drying score (%)	Water score (%)	Energy score (%)	Ease of use score (%)	Overall score (%)	Brand/model (in rank order)
92	570	50	90	86	76	64	80	83	MIELE G 572
95	625	49	87	84	85	52	77	80	AEG Favorit 675
70	500	53	91	69	63	78	77	79	KLEENMAID DW-2
91	675	53	91	83	74	42	77	78	ASKO ASEA 1403-262
85	630	58	82	84	84	51	80	78	BLANCO BIDW 60
99	665	48	86	88	75	44	78	78	BOSCH SMS 5012
78	630	53	88	73	56	51	75	73	SMEG LA 40
96	605	46	69	80	79	56	78	72	BOSCH SMS 7062
57	615	55	73	81	67	54	73	71	OMEGA DW 1407-2
78	695	63	74	76	82	38	77	70	SIMPSON 880M
73	665	54	79	81	24	44	80	66	ROSIERES LVI 300
90	810	57	66	71	37	14	78	56	VULCAN DISHLEX Grange
95	780	53	47	71	53	20	83	52	VULCAN DISHLEX Milano
92	795	55	46	63	57	17	76	50	VULCAN DISHLEX 500 Eco

equal

6 Running costs

Running costs over 10 years are calculated on the basis of 10 cents per kWh and on the assumption that the dishwasher will be used once a day. They don't include the cost of detergent as it can vary a great deal.

7 Washing score

The soil removal performance of the machines was assessed using the methods of Australian Standard AS 2007. These test the machines' ability to remove fatty products (margarine), protein (egg yolk) and to filter out small particles (chopped spinach) as well as baby cereal, tomato juice and tea. This is representative of the types of food a dishwasher would have to deal with in normal use. The program selected for each machine was that recommended in the manufacturer's instructions for normally soiled crockery.

8 Drying score

Drying is assessed 30 minutes after the wash program has stopped. This is to give the residual heat from the washing and rinsing process time to dry off most of the water. All that should remain after this time are spots and/or streaks of water — the less of either, the higher the score awarded.

9 Water consumption score

According to our scale, to score 100% a dishwasher would have to use 15.6 litres of

water per wash, while anything above 35 litres is considered excessive. Most of the models we tested used less than 30 L, while the ROSIERES and the VULCAN DISHLEX Grange used more than 35 L.

10 Energy consumption score

Dishwashers are heavy energy users. Ideally, total consumption for one 'normal' cycle should be around 1 kWh. At the other end of our rating scale, if a machine consumed 2.4 kWh, it would score zero.

11 Ease of use score

The layout of controls and their ease of operation, ease of reading control settings, how easy it is to clean the machine's filter, door operation and loading/unloading are all factored into our ease of use assessment.

12 Overall score

Each dishwasher's overall score was calculated by weighting washing and drying performance, energy and water consumption and ease of use as follows:

- Washing performance: 40%
- Drying performance: 20%
- Water consumption: 15%
- Energy consumption: 15%
- Ease of use: 10%

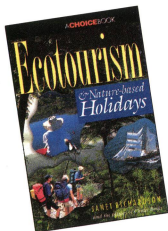
FOR PEOPLE WITH DISABILITIES

According to an occupational therapist from the Independent Living Centre, the main points to look for when choosing a dishwasher for use by people with disabilities are:

- The door should be light and easy to open and close.
- Raised crossbars on control knobs are desirable and pushbuttons should require only a light push.
- Filters should be easily accessible — that is, as close to the door as possible — because reaching forward is difficult for people with back problems.
- Large handles on filters are desirable for easy grip.
- One-piece filters are better than those made up of two or more pieces.

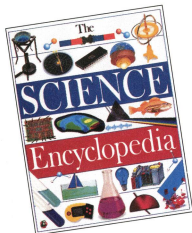
The dishwashers considered most convenient for people with disabilities were the two BOSCH machines and the VULCAN DISHLEX Milano. The MIELE was also considered good, except that some people may find its door difficult to close.

CONSUMER BOOKSHELF



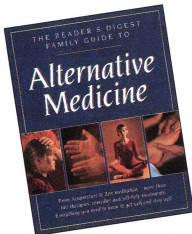
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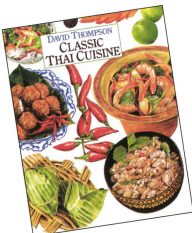
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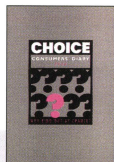
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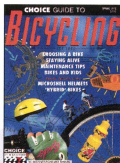
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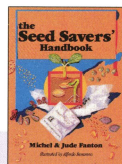
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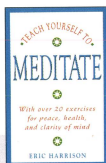
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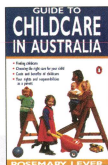
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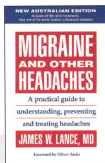
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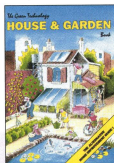
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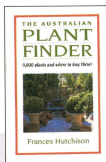
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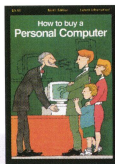
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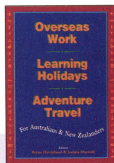
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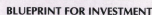
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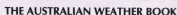
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Fuzzy logic has implications for the future of computer technology, manufacturing and medicine, and Japanese companies were first to exploit its possibilities — such as cars that drive themselves, and software that predicts the stockmarket. A fascinating account of the development of an exciting idea.

1993 CHOICE CHILDCARE SURVEY

Do you have children in part-time or full-time childcare? If so, how satisfactory are your current childcare arrangements? We want to know what you think about this politically and socially topical subject.

THE AVAILABILITY and quality of formal childcare services in Australia is a consumer issue of increasing importance. In 1992, 45% of women with children under four years of age were in the paid workforce. Ten years earlier only 31% of women with young children worked. As women's participation in the workforce grows, so too does the demand for reliable, affordable and safe childcare.

CHOICE is investigating the availability, cost and quality of childcare in Australia for an article to be published in mid-1994. The following survey is designed to give the 'consumers' of childcare the chance to assist us with our research for that article. We want to know, among other things:

- How easy it is to find suitable childcare.
- How much Australian consumers are paying for childcare.
- How satisfied they are with their current childcare arrangements.

We hope you make the most of this opportunity to tell us about your childcare experiences. Please answer all sections of the survey. The *Background information* section will help us to analyse the types of people who need childcare and the percentage of weekly income spent on childcare by different consumers. Your responses are anonymous and all replies will of course be kept completely confidential.

Your answers to the other sections of the survey will be used in our analysis of how consumers go about finding appropriate childcare and their satisfaction with different types including family day care, long day care and occasional care centres, preschools and nanny services. We also hope to identify the major concerns consumers have with their current childcare arrangements.

Please use the extra space allocated for 'comments' to outline anything you think isn't covered by the survey questions.

If you have friends or family who have childcare arrangements, feel free to photocopy this questionnaire for them to complete. When you have completed the questionnaire, just tear out these four centre pages of CHOICE and return them to: CHOICE Childcare Survey, 57 Carrington Road, Marrickville 2204 by December 15, 1993.

We are very grateful for your help with this project.

CHILDCARE SURVEY

Tick the box opposite the appropriate answer, or fill in the box where that is required. Fill in this form for one child in childcare. If you have more than one child in childcare but only have time to fill in the questionnaire once, please give us details for the child whose birthday is due next. If you're happy to give us information about the other child/ren's childcare arrangements too, please photocopy this questionnaire. If you use more than one type of childcare for your child, please fill in the questionnaire for the one your child spends most of his or her time at, or photocopy this questionnaire and fill it in separately for each kind.

TYPE AND EXPENSE OF CHILDCARE

- How many children under 16 usually live in your household?
- How many children do you have in childcare?
- How old is the child whose care is discussed on this form?
- How many hours of childcare per week does this child require?
- Is this your first child to require childcare?
Yes ☐ No ☐
- What type of childcare do you use?
Family day care ☐
Long day care centre ☐
Preschool/kindergarten ☐
Occasional care centre ☐
Nanny or babysitter (in your own house) ☐
Private (family, friends) ☐
Other (please specify) ☐

- Were different types of childcare available in your area?
Yes ☐ No ☐

If your child is cared for in family day care, by nanny or privately, go to question 10

- Did you have a choice of childcare centre?
Yes ☐ No ☐
- Is the centre or program:
Employer-sponsored ☐
Community-based ☐
Private (for profit) ☐

- What is the basic charge you pay for childcare per hour?
- Do you receive a government subsidy (fee relief)?
Yes ☐ No ☐
- Are there any additional expenses involved?
(Please write in the cost for each which applies)
Overtime/late charges (per hour)
Outings
Meals
Other (please specify)

ADMINISTRATION OF CHILDCARE

- Are you satisfied that the centre or carer tells you in full about events in your child's day?
Very satisfied ☐
Fairly satisfied ☐
Uncertain ☐
Somewhat dissatisfied ☐
Very dissatisfied ☐
- How satisfied are you with the responsiveness of the program, centre or carer to suggestions or complaints?
Very satisfied ☐
Fairly satisfied ☐
Uncertain ☐
Somewhat dissatisfied ☐
Very dissatisfied ☐

QUALITY OF CHILDCARE

- Are you satisfied that those who care for your child are well trained and/or experienced?
Very satisfied ☐
Fairly satisfied ☐
Uncertain ☐
Somewhat dissatisfied ☐
Very dissatisfied ☐
- Are you satisfied that those who look after your child care for and cuddle your child enough?
Very satisfied ☐
Fairly satisfied ☐
Uncertain ☐
Somewhat dissatisfied ☐
Very dissatisfied ☐

If your child is cared for in your own home, go to question 19

17. Are you satisfied with the premises at the centre or home?

Very satisfied ☐
Fairly satisfied ☐
Uncertain ☐
Somewhat dissatisfied ☐
Very dissatisfied ☐

Why? _____

18. Are you satisfied with the play and learning materials at the centre or home?

Very satisfied ☐
Fairly satisfied ☐
Uncertain ☐
Somewhat dissatisfied ☐
Very dissatisfied ☐

Why? _____

19. How satisfied are you overall with your present childcare arrangements?

Very satisfied ☐
Fairly satisfied ☐
Uncertain ☐
Somewhat dissatisfied ☐
Very dissatisfied ☐

Why? _____

If your child is cared for by family, or a nanny or babysitter not hired through an agency, go to question 24

OBTAINING CHILDCARE

20. How long did you have to wait to obtain childcare (in months)?

21. Was this your first choice of childcare?

Yes ☐ No ☐

If no, what was your first choice? _____

22. Do you feel that the application process was easy, or were there difficulties, delays or lack of communication?

Very easy ☐
Moderately easy ☐
Somewhat difficult ☐
Very difficult ☐

23. What did you feel was the greatest difficulty in obtaining childcare?

MAJOR CONCERNS WITH CHILDCARE

24. What were the three most important considerations for you in selecting childcare?

1. _____
2. _____
3. _____

25. Do you feel all these considerations are met in the childcare arrangements you have?

Yes ☐ No ☐

If no, which ones are not, and why? _____

26. How did you assess the suitability of different types of childcare? Tick all the relevant responses.

I had no options ☐
Gut feeling ☐
Visiting centres or carers ☐
Talking to centres or carers ☐
Recommended by others ☐
Other (please specify) ☐

27. If you're not completely satisfied with your childcare arrangements, what are the most worrying things about them? (Please tell us up to three things).

28. Does your child have a disability or special needs?

Yes ☐ No ☐ (go to question 30)

29. If so, how well are these needs met in childcare?

Very well ☐
Fairly well ☐
Satisfactorily ☐
Somewhat poorly ☐
Very poorly ☐

Why? _____

COCKROACH KILLERS!

We were pleasantly surprised to find a product that does the job in both the short and long term — without exposing you unnecessarily to risky chemicals.

COCKROACHES are survivors. If you've ever used sticky traps you'll have noticed the odd limb or feeler left behind — as well as being able to live almost anywhere, cockroaches have 14 'snap points' for escape purposes; its owner may have simply grown a new one. Similarly, each generation grows more resistant to existing chemicals.

WHY KILL COCKROACHES?

Cockroaches are disliked for their appearance, and for their potential to spread disease. They carry pathogens from feeding on human and animal waste, and from living in sewers and

greasetraps. Their potential for carrying disease is simply a product of their surroundings; cockroaches living only in clean environments will not carry disease.

Heavy infestations leave a distinctive smell on the food they eat and where they live due to the secretions from their mouth and body. The brown smears seen around skirting boards and (more disconcertingly) on unwashed dishes and plates are defecation marks.

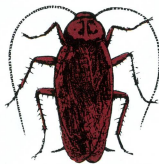
Some people develop allergies to cockroaches, presumably because the dried cockroach faeces become part of the household dust, and constant expo-

sure can result in sensitivity, particularly if you suffer from asthma.

Domestic cockroaches will eat anything organic. They prefer starchy and sugary foods over fruits and meats, but will eat fresh fruit if they're thirsty. Their diet includes leather, cardboard, fabrics, hair, glue, wallpaper paste, book bindings, grease droplets and, of course, food scraps. When the infestation is severe (and the competition for food is greater) they have even been known to nibble at the hair, fingernails and toenails of sleeping or helpless people.

The first line of defence, then, is to keep your home clean — particularly the

KNOW YOUR COCKROACHES



■ **American cockroaches**
(*Periplaneta americana*)

Probably the largest cockroaches: 30–45 mm long. They're a shiny red-brown colour, and can fly. Egg cases are usually dropped or glued to surfaces close to food and water. The female can produce hundreds of cockroaches in her lifetime of six months to a year.

Each egg case contains up to 16 eggs and the nymphs may take up to 15 months to develop into adults. They prefer warm, moist, dark conditions and tend to live outdoors in warm regions and indoors in colder ones. They live in walls, roof and subfloor spaces, and in and around sewers, cellars, greasetraps and rubbish dumps. Their preferred food sources include human or animal food, paper and book bindings. Adults can live for two to three months without food providing they have water.



■ **German cockroaches**
(*Blattella germanica*)

They're small — about 10–15 mm — and probably the most widespread species. Both adults have wings but they rarely fly. They take as little as 40 days to develop from hatching to adulthood. The female lays 30–40 eggs in each egg case, which she carries until just before hatching. Each female can produce four to eight egg cases in its lifespan of six to 12 months.

This cockroach prefers warmth, food and moisture and is commonly found in kitchens, bathrooms and food storage areas. Because of their small size and lack of wings in infancy, German cockroaches are often not recognised and may be ignored until a heavy infestation has built up.



■ **Smoky brown cockroach**
(*Periplaneta fuliginosa*)

30–35 mm, dark brown to black. The female produces around 300 to 450 cockroaches in her lifetime of about a year. This cockroach's lifestyle is similar to that of the American variety, but the egg cases dropped by females may contain up to 26 eggs, which when hatched take six to 12 months to develop. Females typically produce up to 20 egg cases in their life. They're normally found in garages, sheds, subfloor areas, greasetraps and drains.

Illustrations courtesy of W A Flick and Co.

kitchen. Wash dishes before going to bed, fix dripping taps (water is essential to cockroach survival), and mop up puddles of water in the bathroom, kitchen sink and under the fridge.

DO YOU HAVE A COCKROACH PROBLEM?

Not all species are pests. The three most likely to infest your house are the American and German cockroaches, and sometimes the Smoky Brown (see *Know your cockroaches* on page 27). How much you need to invest in cockroach treatments depends on the extent of the problem.

Cockroaches are mostly nocturnal so if you see any during the day you can assume there's a fairly heavy infestation. Wandering cockroaches are actually searching for less crowded living conditions!

You'll find them living in places where they can find moisture, warmth, semi-darkness and food. Although the

kitchen, bathroom, laundry and pantry are obvious choices, they will also live around water heaters and electrical appliances (such as the back of the microwave oven), and near cold water pipes (for drops of condensation).

German cockroaches, being the smallest of the domestic varieties, are commonly found in cracks and crevices, gaps beneath and around sink units, drawers, refrigerator motors, refrigerator door seals and hinges, cupboard hinges, cane baskets, stored papers, books and electrical appliances. Their droppings are tiny and resemble poppyseeds.

The larger varieties such as the American cockroach and the Smoky Brown tend to live outdoors or congregate in empty spaces, such as in the ceiling, below the floor, behind walls and cupboards and in sewers. Their droppings are easier to see, resembling small mouse-droppings.

Incidentally, the cockroach popula-

tion at your place isn't likely to increase if your neighbours fumigate their property. The German cockroach tends to stay near home and will probably remain within the treated area. The larger cockroaches may wander into your yard but will probably be too affected by the treatment to be a problem.

WHAT TREATMENT DO I USE?

To determine which treatments are the most effective we bought as many as we could find — seven surface sprays, seven bombs, four traps, two baits, a mat, a dust pack, and an Electronic Zapper — and sent them off for evaluation to a testing laboratory specialising in agricultural and biological research.

In keeping with 'green' thinking, we also submitted a home-made cockroach killer of borax and sugar.

Each treatment was tested in conditions designed to simulate a domestic



All the treatments we tested: baits, traps, the Electronic Zapper and homemade borax and sugar (top photo); surface sprays, bombs and dust (bottom). The star performer was the Dead End Mat (top picture) — and it was also very cheap (see page 32).

situation. Where appropriate we tested both the immediate effect and the long-term effectiveness — given that surface sprays, dust, bombs and baits are expected to keep on working for up to three months.

KNOCK-DOWN vs KILL

A word about 'knock-down' vs 'kill'. Scientists generally regard evidence of knock-down (a cockroach lying on its back waving its legs) as 'mortality'. They say at least 95% of cockroaches affected to this extent will die within five days. Although a 5% recovery rate doesn't sound significant, one cockroach may hatch hundreds of young during its lifetime, eventually giving rise to a population of cockroaches with a natural immunity. There is already evidence of insects growing more resistant to some pyrethroids, so we recommend using only those products with a demonstrated killing ability. (Besides, with respect to living things, anything which leaves a creature

dying for five days should be avoided when there are quicker alternatives.)

We found some interesting performance differences between types of treatment.

SURFACE SPRAYS, DUST AND BOMBS

■ **Bombs**: Bombs work on the knowledge that cockroaches like to pack down together in tight spaces when resting. To operate a bomb aerosol you pull the pin and leave the room for at least two hours. The poison released from the aerosol drifts into even the smallest cracks and crannies, supposedly to kill the cockroaches lurking there. Unfortunately, it also drifts over everything else — the furniture, carpet, in fact everything you touch. It's not a good option if you have young children around, or if anyone living in the house has weakened immunity or is sensitive to chemicals.

Overall, we can say the bombs were outperformed by the surface sprays on most surfaces. They knocked down

cockroaches, but their actual 'kill rate' left something to be desired. Two hours after each bomb went off none of the cockroaches was on its feet but only a few were dead. The kill rate had improved after 48 hours, particularly for the American cockroaches (which were harder to kill), but none of the bombs killed all the cockroaches.

■ **Surface sprays and dust** rely to a large extent on the natural tendency for cockroaches to groom their antennae and legs by running them through their mouth — any insecticide stuck to the cockroach will be ingested in a grooming session and hasten its death.

Surface sprays aren't really intended to be used as direct-hit aerosols even though some instructions advocate spraying directly onto any cockroaches you see. They're meant to cover surfaces such as skirting boards and behind a cupboard or fridge. Be careful not to inhale as you're spraying because breathing it in can make you feel ill.

KEY

■ German cockroaches
■ American cockroaches

■ Dead
■ Moribund

Cockroaches look dead, but show some movement when prodded.

■ Knocked down

Cockroaches on their backs, waving their legs with unco-ordinated movements.

Figures 1, 2 and 3. Baits have a less immediate effect than surface sprays, but once they get going they're very effective. The **DEAD END** Mat in particular stood out as achieving a good rate of knock-down and kills after only 24 hours, and very close to 100% kill rate for both cockroach species within a week. It also maintained this effectiveness for three months, so if you're not desperate to have all cockroaches dead within a few hours it's the stand-out product all round. The **BAYGON** and **RAID** baits also performed well in both the short and long term.

Figure 1. Baits — 1 day after placement

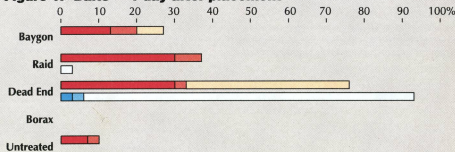


Figure 2. Baits — 7 days after placement

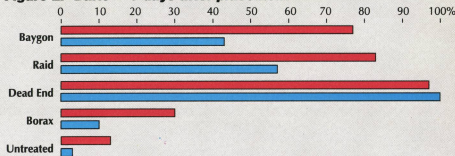
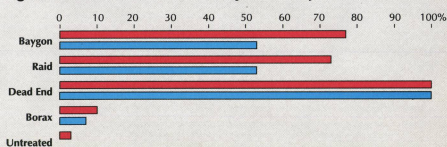


Figure 3. Baits — 3 months after placement, new cockroaches



Sprayed directly onto cockroaches the surface sprays we tested all killed fairly rapidly, except BAYGON REGULAR, which only knocked them down. After 24 hours some German cockroaches had died from this spray, but the rest were still alive and kicking; it hadn't killed any American cockroaches in this time.

The effectiveness of a surface spray used as it's intended seems to depend very much on the type of surface treated.

On painted pine (like skirting boards) MORTEIN High-performance, MORTEIN Low-toxic and BAYGON Low-irritant surface sprays killed all the American and German cockroaches within 24 hours. The story was very different on unpainted pine (like the inside of cupboards), however: few of the surface sprays did more than knock the cockroaches down, with RAID and BAYGON Regular the only ones to score a small number of kills. BAYGON Dust, on the

other hand, had started to become effective on this surface after 24 hours.

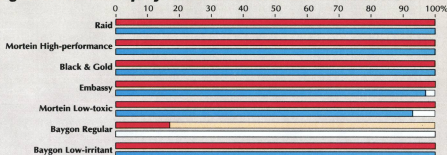
ARE THEY STILL EFFECTIVE AFTER THREE MONTHS?

The chemicals left by bombs, dust and surface sprays are supposed to keep on working for up to three months.

As well as the painted and unpainted wooden surfaces we also tested the treatments on ceramic (tiled) surfaces. Only

Figure 4. If you aim surface spray directly at cockroaches, using it in effect as a knockdown aerosol, it's very effective, though hardly practical on a large scale. Twenty four hours after doing this all the sprays except BAYGON Regular Surface Spray had killed as good as 100% of both types of cockroach. In fact all but this one were nearly as effective only two hours after direct spraying.

Figure 4. Surface sprays knockdown test — after 24 hours



Figures 5 and 6. Surface spray's intended use (as with BAYGON Dust) is to leave an insecticide residue on such areas as skirting boards (represented in our tests by painted pine), inside cupboards (represented by unpainted pine), behind fridges (on tiles in our test) and so on. For the painted pine we found MORTEIN High-performance Surface Spray, MORTEIN Low-toxic Surface Spray and BAYGON Low-irritant Surface Spray to be 100% effective on both types of cockroach after only 24 hours. They're probably the products to go for if you want a quick result, such as spraying to get rid of cockroaches a day before you move into a house or flat.

On unpainted pine BAYGON Dust had started to work effectively after 24 hours, but none of the surface sprays had killed many cockroaches.

Figure 5. Surface sprays on painted pine — after 24 hours

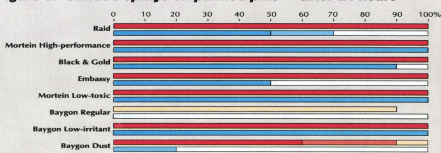


Figure 6. Surface sprays on unpainted pine — after 24 hours

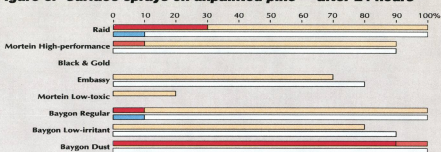
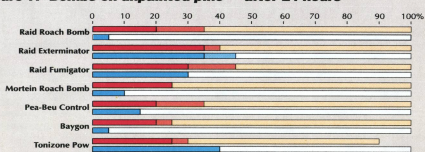


Figure 7. On unpainted areas like the insides of cupboards, bombs in general killed more cockroaches than surface sprays in the first 24 hours, though on surfaces like painted skirting boards the sprays were much more effective.

Figure 7. Bombs on unpainted pine — after 24 hours



five of the seven bombs were still working sufficiently after three months to give a reasonable control of American cockroaches on these ceramic surfaces. There was no residual effect at all on the painted pine plywood when cockroaches walked across it three months later, and very little on the unpainted pine.

We found this also happened with the residue from surface sprays. Despite what the ads say, spraying painted skirting boards to help reduce your

cockroach population will only work for the first few days.

BAYGON DUST was the only treatment in this category to kill a significant number of cockroaches after three months regardless of which surface it was on, although it left a considerable number alive and kicking — but because of its very toxic ingredients we don't recommend using it in food preparation areas. Like the bombs and sprays, however, its performance dropped off with

time, so that after three months it was far outperformed by the baits and the mat.

BAITS, AND THE DEAD END MAT

Baits are food which contains pesticide. We placed each in a large container which also accommodated food and water so the cockroaches would not be obliged to eat the bait for food.

The effectiveness of each bait (and the mat) was tested at varying intervals by introducing American and German

Figures 8 and 9. When new cockroaches were introduced to the previously sprayed or dusted surface after two weeks, the tests showed only **BAYGON Dust** had much residual killing effect. In fact, on painted pine only it and **BAYGON Regular Surface Spray** had any effect at all. The results for unpainted pine had improved in this time — perhaps due to the insecticide having soaked into the wood — but still **BAYGON Dust** was the only product with a high kill rate for both types of cockroach. As it's not a good idea to respray your home every few weeks to renew the insecticide's effectiveness, we don't recommend surface sprays for long-term cockroach control.

Figure 8. Surface sprays on painted pine — after 2 weeks

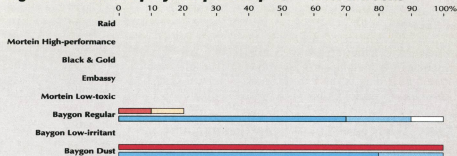
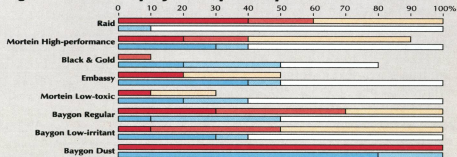


Figure 9. Surface sprays on unpainted pine — after 2 weeks



Figures 10 and 11. After three months there's not much to choose between bombs and sprays — for long-term control baits are much more effective.

Figure 10. Surface sprays on unpainted pine — after 3 months

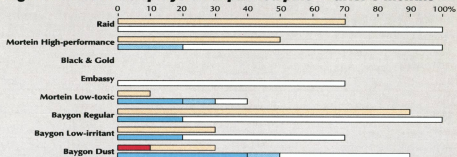
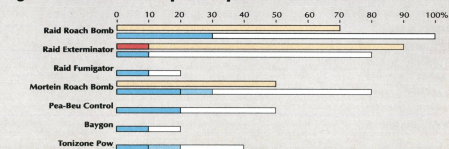


Figure 11. Bombs on unpainted pine — after 3 months



KEY

- German cockroaches
- American cockroaches

- Dead
- Moribund

Cockroaches look dead, but show some movement when prodded.

■ Knocked down
Cockroaches on their backs, waving their legs with unco-ordinated movements.

COCKROACH KILLERS

cockroaches to the container, and counting the number of punch-drunk, sick and dead cockies which appeared over the next fortnight.

The DEAD END mat was the fastest and the most effective treatment of the three baits tested. In fact by the end of one week it was the most effective treatment of all for both types of cockroach, apart from squiring them singly with surface spray, a tedious and somewhat hit-and-miss method. It was also cheap (we paid \$2.99 for a box of six mats). Unfortunately DEAD END mats are only available in NSW, NT, Queensland and WA, where you should find them in most discount supermarkets.

The mat is a piece of cardboard impregnated with a low level of insecticide. The pesticide is contained in the printing ink and, according to the manufacturer, should last a very long time. The pesti-

cide doesn't evaporate and isn't water soluble, so you should be able to wipe it clean of dust every month or so with a cloth, and it will keep its effectiveness. Cockroaches are affected when they walk across it and will eventually die. In four days the mat we tested had killed 100% of the American cockroaches and 97% of the German variety. What's more, it remained 100% effective for three months.

STICKY TRAPS

Sticky traps are the only non-chemical method of killing cockroaches, and are also useful for monitoring the extent of a problem. If you're catching around 20 cockroaches a day you'll need to consider assertive action. They are the only type of treatment which also trap the female's egg case, preventing her dropping it elsewhere and its potentially

hatching. An egg case can contain up to 40 eggs, depending on the species.

Sticky traps seem to lose their effectiveness after the first two days. This is thought to be because they rely on chance that the cockroaches will walk through them. As the population diminishes the chances of them getting caught in the trap are less. The greatest percentage of cockroaches caught was always on the first day and in the traps nearest the harbourage.

In general, traps performed better on American cockroaches and baits on the German variety.

THE ELECTRONIC ZAPPER

The ELECTRONIC ZAPPER lures cockroaches into a set of electrically charged plates to eat a vegetable mixture, where it hits them with 4300 volts of electricity. The manufacturer claims this form of

Cockroach treatments — active ingredients

Brand (in alphabetical order within groups)	Manufacturer/distributor	Origin	Active ingredients
BAITS/MAT			
BAYGON Cockroach Baits	Bayer Australia	NZ	5.0 g/kg chlorpyrifos
DEAD END Cockroach Insecticide Mats	MJA Scientific International	Australia	0.1 g cypermethrin per mat
RAID Cockroach Baits	S C Johnson & Son	NZ	5.0 g/kg chlorpyrifos
TRAPS			
MOSOM Non-toxic Cockroach Traps	Campbell Brothers	not stated	none stated
NITTO Cockroach Trap	Rentokil	not stated	none stated
STIK-A-ROACH Super-strong Cockroach Trap	Chemical Enterprises (Qld)	Taiwan	none stated
ZORO ZORO Cockroach Trap	Five Star Japan Co	Japan	none stated
SURFACE SPRAYS			
BAYGON Low-irritant Surface Spray	Bayer Australia	not stated	2.8 g/kg permethrin 25:75, 2 g/kg tetramethrin
BAYGON Regular Surface Spray	Bayer Australia	not stated	20 g/kg propoxur, 2 g/kg tetramethrin, 10 g/kg piperonyl butoxide
BLACK & GOLD Surface Spray	Amalgamated Australia Wholesalers	Australia	2.85 g/kg permethrin 25:75, 1.0 g/kg allethrin 20:80
EMBASSY Surface Spray	Coles Supermarkets	not stated	2.85 g/kg permethrin, 1.0 g/kg allethrin 20:80
MORTEIN High-performance Surface Spray	Samuel Taylor	Australia	3.5 g/kg tetramethrin, 2.0 g/kg cypermethrin
MORTEIN Low-toxic Surface Spray (A)	Samuel Taylor	Australia	2.79 g/kg permethrin 25:75, 1.38 g/kg tetramethrin
RAID Surface Spray	S C Johnson & Son	not stated	3.5 g/kg tetramethrin, 2.0 g/kg cypermethrin
DUST			
BAYGON Dust	Bayer Australia	not stated	10 g/kg propoxur
BOMBS			
BAYGON DIY Insect Control	Bayer Australia	not stated	9.3 g/kg permethrin 25:75
MORTEIN Roach Bomb with Insect Growth Regulator	Samuel Taylor	Australia	10.0 g/kg permethrin 25:75, 6.0 g/kg fenoxycarb
PEA BEU Control (B)	Pea Beu Manufacturing Co	Australia	9.3 g/kg permethrin 25:75 (B)
RAID Roach Bomb	S C Johnson & Son	not stated	10 g/kg permethrin 25:75
RAID Exterminator	S C Johnson & Son	not stated	10 g/kg permethrin 25:75
RAID Roach Fogger	S C Johnson & Son	Canada	126 g/kg permethrin 25:75
TONIZONE Pow Roach One-shot Control (with IGR)	Multi-fill	not stated	6.0 g/kg hydroprene, 2.5 g/kg permethrin
ZAPPER			
ELECTRONIC ZAPPER (C)	Jantra Moon	Australia	electric pulse
HOME-MADE TREATMENT			
BORAX AND SUGAR	not applicable	not applicable	5% borax/sugar

Prices ranged from \$2 to \$7 depending on the product and where you buy it, except for the Electronic Zapper, for which we paid \$128.

(A) To be renamed Mortein Low-irritant Surface Spray.

(B) Will contain fenoxycarb (for flea control) by November.

(C) Voltage has been increased since our test, with the intention of killing smaller cockroaches.

elimination not only kills the cockroach but also its eggs, thereby breaking the breeding cycle.

The ZAPPER gave disappointing results — especially considering the price we paid (\$128). It also gave off an unpleasant odour when cockroaches were caught and electrocuted. According to the test laboratory "a small plume of smoke was seen rising from the ZAPPER after each pulse of electricity".

Two live American cockroaches recovered at the end of the seven-day trial, having had their legs partially burned off.

It killed around double the number of German than American cockroaches, but can't really be recommended for either.

THUMBS DOWN FOR BORAX

The home-made borax mixture failed miserably. Even though the cockies ate 70% of the mixture over the three-

month trial period its results were next to useless (less than 7% for killing American cockroaches and 20% for the German variety). Killing cockroaches of either variety, it seems, calls for serious chemicals.

AND THE WINNERS ARE ...

The best treatment overall was the DEAD END mat. Not only is it relatively environmentally friendly, it took only four days to reach maximum effectiveness and was then 100% effective against both species of cockroach for three months, making it also the longest-lasting treatment.

If you need even faster action — you're moving into a new home the next day, for example — a surface spray is the way to go: MORTEIN High-performance, and BAYGON Low-irritant were the best on a variety of surfaces, with RAID just a

little less effective on some surfaces. BAYGON Dust starts to become effective after a day or two, and has a longer-lasting effect than the sprays on all surfaces.

The effectiveness of surface sprays drops off rapidly over time, particularly on painted skirting boards and on bare timber such as inside cupboards. The performance of the surface sprays and bombs we tested began to diminish somewhere between 48 hours and two weeks after application. We don't suggest you keep spraying, though. If you want to spray to get rid of a heavy infestation quickly, we suggest you spray once, then follow it up by putting down an appropriate number of DEAD END mats. Wipe the mats over every so often to get rid of any dust and they will last longer. If you can't buy them in your state, BAYGON or RAID baits are the best long-term treatment. □

WHAT CHEMICALS ARE THOSE?

The main chemical groups used in cockroach killers are:

- Synthetic pyrethroids: allethrin, tetramethrin, permethrin and cypermethrin.
- Carbamates: fenoxycarb, propoxur.
- Organophosphates: chlorpyrifos.

PYRETHROIDS

Synthetic pyrethroids are contact poisons that penetrate rapidly into the nervous system and cause exceptional excitation, followed by lack of co-ordination, paralysis and eventually death. Some work so quickly the insect is incapable of moving away, yet the dose of these may be insufficient to kill because the insect can detoxify the chemical rapidly and eventually recover. Many pyrethroids are therefore combined to complement each other. For example, allethrin acts rapidly but is not long-lasting, whereas permethrin is less potent initially, but increases in potency over time.

Pyrethroids appear to be more effective at lower temperatures, which in part explains why insects are more vulnerable than mammals — insects have lower body temperatures.

Allethrin is first-generation synthetic pyrethroid which break down rapidly in sunlight. Their effectiveness as an insecticide is enhanced when used in combination with a synergist such as piperonyl butoxide.

Tetramethrin is a second-generation pyrethroid which gives good knock-down in a formulation but a relatively low kill rate. Second-generation pyrethroids are not acutely toxic to people or other mammals, but chronic tests have not been exhaustively conducted and you should avoid undue exposure.

Permethrin 25:75 (which is used in most of the bombs and sprays we tested) is a third-generation pyrethroid which does not decompose in sunlight, so it is used for its residual effect. Permethrin is highly toxic to aquatic arthropods and fish, so you need to take care and cover any aquariums before spraying.

Cypermethrin is a fourth-generation pyrethroid which is less likely than the others to break down in sunlight. It's used where a long-lasting residual effect is required. It is also highly toxic to fish.

Piperonyl butoxide is frequently used with other pyrethrins, pyrethroids and carbamates to enhance their effect and lessen the chance of insects developing resistance to them. It may reduce the immune response system in people if they are exposed to it.

ANTICHOLINESTERASE AGENTS

Organophosphates and carbamates both operate by inhibiting the enzyme acetylcholinesterase, which is important for regulating nerve transmissions. On the labels of insecticides containing these chemicals you'll see the words 'an anticholinesterase compound' or similar. They're harmful to humans too (potentially deadly in high enough doses), so always try to avoid undue inhalation or contact when you're using these products.

CARBAMATES

Many carbamates are moderately to highly toxic if swallowed, and some may be absorbed through the skin. Some are carcinogenic, teratogenic (lead to foetal abnormalities), or mutagenic (cause genetic changes). Chronic exposure can permanently damage the nervous system.

Fenoxycarb is a carbamate which also acts as an insect growth regulator by inhibiting the development of the cockroach at some stage through its life. The chemical sterilises the female cockroach so it either doesn't lay eggs or produces eggs which do not develop. It also acts by affecting the cuticle surrounding the insect, which is normally shed between the nymph and adult stages.

Fenoxycarb has a strong residual effect but no immediate one. It's often used in combination with permethrin so the permethrin kills the adult cockroaches and the fenoxycarb breaks the breeding cycle. Insects affected by the chemical are easily identified as they have crinkled wings. It is very stable and doesn't break down in sunlight.

Propoxur is a carbamate which is characterised by a fast knock-down and long residual effect. It is a neurotoxin, is highly persistent in soils and degrades easily in water.

ORGANOPHOSPHATES

Chlorpyrifos is an organophosphate which acts on the nervous system (of cockroaches and man). It results in an overstimulation of the muscles and glands: acute poisoning is associated with excessive sweating, salivating, convulsions and paralysis, leading (depending on the dose) to death. It's a fat-soluble chemical and therefore accumulates in the fat tissues in the body, from which it is slowly metabolised and excreted.



BODYWISE

WISE UP TO FOOD AND HEALTH

CHOICE SUBSCRIBERS keep saying they want more information on food and health issues. So here it is — a new regular page, **Bodywise**.

Safe, enjoyable and nutritious food is one of life's pleasures. And good health is priceless. Although these have such an impact on our quality of life, it's not easy for people to obtain reliable facts or follow developments. Yet with the facts at our fingertips we can make more informed decisions about our own health, our lifestyles and the food we eat. That's where we hope we'll be able to help, at least a little.

The scope for this page is enormous — health claims, labelling, new drugs, benefits of exercise and so on — so we'll be relying on you to tell us what areas you're interested in. Some of the stories you'll read here might touch on a subject you'd like to find out more about — maybe you think it's worth a full-blown article. Write to us at **Bodywise**, CHOICE, 57 Carrington Road, Marrickville 2204.

PLAY SAFE WITH FREEZING

Q: Can you freeze foods twice safely?

GENERALLY SPEAKING, it's best not to refreeze food which has already thawed. Most food has some microbial contamination. Cooking kills many micro-organisms but freezing merely suspends them in time.

Somewhere between freezing and

cooking is an optimum temperature for microbial growth, so in the thawing process you run the risk of allowing the microbial population to run riot. If you refreeze the food, it will contain a higher number of micro-organisms, which then get a second run through the optimum temperature when it thaws again. Even if you cooked the food correctly after its second thawing — thus killing the micro-organisms — you may not destroy any toxins they had produced. These toxins can also give you food poisoning.

Some foods need more careful handling than others. Vegetables can be refrozen if there are still some ice crystals in the bag. Poultry and stuffed foods must never be refrozen because they are more highly contaminated in the first place. Solid pieces of meat thawed in the fridge could possibly be refrozen safely because the centre should still be uncontaminated. If food's thawed outside the fridge micro-organisms could easily flourish, as much of the food will have been at room temperature for some time, so it should either be cooked or thrown out, never refrozen.



SPACED OUT OR STRESSED OUT?

IN PREPARATION for missions which boldly go where no man has gone before — like Mars — scientists at the European Space Agency are examining the psychological effects of long space flights. Why? Because stress — whether it's because of boredom, personality clashes or isolation — can effect productivity, judgment, and ultimately the success of a mission.

But it doesn't take setting off on a two-year journey to Mars to bring on stress, or feel the adverse effects of it. The anxiety and depression stress causes lead to headaches, constipation and skin problems at one end of the scale. At the other end, it's implicated in heart disease and stomach ulcers and may even contribute to cancer.

The list of stress-related problems is growing. A recent study in Denmark found an increased risk of a premature birth with mothers who were highly stressed in late pregnancy. Another in

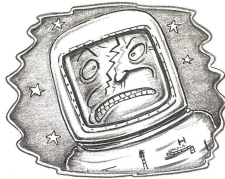
Newcastle, NSW, linked reduced learning ability in children to their mothers' stressed pregnancies. Several studies are confirming perhaps what we already knew — that you're much more likely to suffer a cold if you are under some sort of stress.

So the message is clear. Reduce stress. But what is it anyway? And how do you control it?

The Macquarie Dictionary defines it as: *a disturbing physiological or psychological influence which produces a state of severe tension in an individual*. This tension, part of the 'fight or flight' response, sets our hearts racing, blood pressure rising and our muscles tightening.

That's why many stress-control techniques revolve around relaxing the muscles and concentrating on deep breathing, which in turn will slow the heartbeat.

So like the astronauts who can't stop the rocket, when you can't remove the



source of stress, you can learn to manage it with simple breathing exercises like counting your breaths as you breathe deeply (it sounds easy, but see how far you go till your mind wanders). Other options include yoga, massage and meditation. Exercise and laughter also defend you against stress as they trigger the release of mood-improving chemicals into the blood. It's worth learning to deal with stress — and you don't have to be off the planet to try!

LAWNMOWERS

We tested petrol mowers priced less than \$500, and a new cordless electric model.

MOST MOWERS sold in Australia are petrol-fuelled, with pull-starting mechanisms and costing less than \$500. We tested all those on the market which fit into this category by taking them to Cairns (where the grass grows quickly, even in winter when we have to test to be able to publish in spring) and using them in a range of conditions.

Each mower was used to cut grass of four different lengths (very short to long) and various types (well-tended light couch, a thick mixture of buffalo and giant couch, and a mix of overgrown

couch and weeds). The areas of grass were carefully prepared for us by a gardening centre. Our best-laid plans almost went astray when an enthusiastic neighbour tried out his new mower on one of the areas of long grass especially grown for us, the day before our tester, Max, arrived! Luckily we were able to find more grass — our grateful thanks to the Yorkey's Knob Sports Centre and the people at Holloways Beach and Kewarra, who let us cut their lawns.

For details of how we tested and the results, see the table and notes on page 39 and the profiles. We also tested a cordless electric mower, the **BLACK & DECKER Stealth**. It is discussed on page 38.

CHOOSING A MOWER

If you're buying a new lawnmower, the first choice to be made is between petrol and electric. (People with small lawns or

an athletic bent might also consider push mowers.) While the vast majority of people opt for petrol mowers, electric ones do have some advantages and are worth considering. Some of the factors to take into account are discussed below.

■ **Power:** Petrol mowers are certainly more powerful than most mains-powered electric ones. But in our last test (November 1991), we found this only became noticeable when cutting longer grass and clearing overgrown areas. People who mow the lawn frequently would probably find electric mowers sufficiently powerful.

■ **Ease of use:** Previous testing has found mains-powered electric mowers are generally lighter and easier to push, manoeuvre and operate than petrol mowers, especially the hover type. They also vibrate less and require much less maintenance. On the downside, however, keeping the

PROFILES

Prices shown are a good target to aim for when shopping around, based on nationwide checks in September 1993. Anything lower is a bargain.



FLYMO RL-480

Target price: \$495

Good points

- Best cutting performance.
- Easy to push and manoeuvre.
- Good handles.
- Simple, well-marked controls.
- Best for edge cutting.
- Good on slopes and rough ground.

Bad points

- Checking oil level is a bit of a hassle.
- Engine tended to accelerate and decelerate by itself.

FLYMO RL-320

Target price: \$469

Good points

- Good cutting performance.
- Easy to push and manoeuvre.
- Simple, well-marked controls.
- Good for edge cutting.

Bad points

- Checking oil level is a bit of a hassle.

ROVER COMBAT 2014

Target price: \$499

Good points

- Good cutting performance.
- Easy to push.
- Equal best catcher — well-balanced, easy to attach and empty.
- Well-marked, easy to use controls.
- Easiest mower to push up slopes.
- Good on rough ground.
- Easy to check oil level.

cord out of the way, free of tangles and clear of trees and other obstacles can be a pain, and makes them not really suitable for mowing large areas — which was why we took the opportunity to assess a cordless electric mower. As well, some models can't be used with a catcher or have limitations in regard to their catches.

■ **Starting:** Electric mowers are very easy to start — it only takes the flick of a switch — but new petrol mowers are generally a lot easier to start than they used to be. In this test, we found some petrol mowers, particularly the two-stroke models, required very little effort, starting on the first pull of the cord.

■ **Safety:** There's not much information available about the safety difference between electric and petrol mowers, but what there is suggests electric models are at least no more dangerous than petrol ones.

All the petrol mowers we tested this time passed the foot probe test, which checks that the blade is adequately guarded, and another safety test which checks the blade slows down and stops quickly once the mower is turned off. All except the SUPERSWIFT Lawleader came with instructions which included good

advice for safe use of lawnmowers. It's a good idea to read this advice when you buy a new mower.

The main dangers are running over your own foot, cuts and lacerations to your fingers and throwing up a stone which hits someone else in the yard. The design of most modern mowers reduces the risk of the former happening, and wearing solid shoes and not pulling the mower back towards you — especially if you're mowing without the catcher — reduces it further. It is much safer to use a mower with the catcher or a grass spreader attached, and most come with a recommendation that they're never used without one.

Accident statistics show injuries to the hands and fingers often occur when the user tries to clear clippings or some other obstruction from under the mower without turning it off first, so resist the temptation to do this! If your lawn is stony, it's a good idea to keep other people out of the yard when you're mowing. You could also wear safety goggles to prevent dust and clippings getting in your eyes.

With mains-powered electric mowers, an additional worry is running over the cord. Double insulation on modern

models means you won't get an instant shock if you do, but you still need to exercise caution. Using a portable safety switch will make it safer still, and we recommend one is always used with electric mowers, and all power tools.

■ **Environmental impact:** Unless you opt for a push mower, lawnmowing does have an environmental impact. Both petrol and electric mowers use non-renewable fossil fuels to power them: the petrol type directly, and electric in that most electricity in Australia is generated by burning coal or natural gas. So using either type leads to emissions of carbon dioxide, a major greenhouse gas. In Tasmania, however — where electricity is produced by hydro schemes which don't result in CO₂ emissions — electric mowers do have the environmental edge.

Research by the Victorian Environmental Protection Agency indicates lawnmowing accounts for around 3% of all CO₂ emissions in Melbourne. The figure is likely to be similar in Sydney, and slightly more in cities with less industry.

In most places, however, the main difference for pollution is at the local level. Unlike electric mowers, petrol mowers produce local fumes — containing hydrocarbons, carbon monoxide,



VICTA COMMANDO AC052 AA92

Target price: \$499

Good points

- Fairly good cutting performance.
- Easy to push.
- Easiest petrol mower to start.
- Well-marked, easy-to-use controls.
- Good handles.
- Best mower on rough ground.
- Easy to maintain (if you buy premixed fuel).
- Easy to fold away for storage.

Bad points

- Worst mower for vibration.
- Worst for leaving large clumps of clippings without catcher.

ROVER 2026

Target price: \$449

Good points

- Fairly good cutting performance.
- Equal best catcher — well-balanced, easy to attach and empty.
- Well-marked, easy-to-use controls.

Bad points

- Checking oil level is a bit of a hassle.

VICTA HURRICANE* AF055 AB92

Target price: \$455

Good points

- Fairly good cutting performance.
- Easiest mower to start.
- Easy to push.
- Well-marked, easy-to-use controls.
- Good on rough ground.
- Easy to maintain (if you use premixed fuel).

Bad points

- Quite noticeable vibration.

* Also sold in different stores as the Charger, Clubsman, Concorde, Jogger, Lawnmaster, Pacer and Wildcat.

oxides of nitrogen and particulates — which contribute to smog and can be unpleasant for the user to breathe. Electric mowers are also quieter than petrol ones, usually by around 10 decibels.

In general, petrol mowers will be more suitable for people with large areas to mow and when long grass has to be cleared. Mains-powered electric mower types can be very suitable if you have a fairly small lawn without too many obstacles and you mow regularly so the grass never gets very long.

DIFFERENT STROKES

If you decide on a petrol mower, there is a choice between two-stroke and four-stroke engines, and pull or key starting mechanisms. In this test, we found little difference in the cutting performance and ease of use of the different engine types — see table note 1 overleaf for more details. A major difference is in environmental impact. According to the US Environmental Protection Agency, emissions from four-stroke petrol mowers contain much lower amounts of hydrocarbons, carbon monoxide and particulates than those produced by two-stroke mowers.

In terms of starting mechanisms, key-

started mowers are claimed to be very easy to start, but generally cost around \$150 more than a pull-starting model. Our testing has found some pull-starting mowers are also very easy to start, particularly the two-stroke models.

KEEPING THEM ON THE GRASS

Petrol lawnmowers require a certain amount of maintenance. The instructions which come with mowers usually include details of what you should do to keep your mower in good working order. It is quite simple stuff: filling the fuel tank, cleaning the air filter, changing the spark plugs occasionally, keeping the area under the skirt of the mower reasonably free of clippings, and changing the blade when it gets worn. With four-stroke mowers, you also need to check the oil and change it occasionally.

We assessed how easy it was to do these things on the mowers in this test — any problems are included in the profiles. One point with petrol mowers is, if the mower has a fuel tap, to remember to turn it off after you've finished mowing. If you don't you're likely to flood the engine when you next try to start it, making it hard work to start. In this test,

we found this was particularly a problem with the two-stroke mowers.

WHAT TO BUY

FLYMO RL-480	\$495
FLYMO RL-320	\$469
ROVER Combat 2014	\$499

Of the mowers we tested this time, these three had the highest scores for cutting performance, were easy to use and had good catchers. All the other mowers except the MTD were quite good too — see the profiles for their pros and cons. Compared with the others the MTD was significantly poorer for both cutting performance and ease of use, and is not recommended.

WHAT WE DIDN'T TEST

HONDA, GREENFIELD, SNAPPER, WEBB, AV and ALROH mowers were not included in this test because all their models cost over \$500 when we bought. Of the brands reported on, other models were not tested for the same reason, or because they were utility (no catcher) mowers.



MASPORT 300-4

Target price: \$460

Good points

- Fairly good cutting performance.
- Fairly good mower overall.

Bad points

- Catcher broke during first week of testing.
- Checking oil level is a bit of a hassle.
- Had one of the lowest scores for ease of use.

SUPERSWIFT LAWNLEADER

Target price: \$499

Good points

- Fairly good cutting performance.
 - Controls easy to use and quite well-marked.
 - Fairly good mower overall.
- #### Bad points
- One of the hardest mowers to start.
 - Hard to push up slopes.
 - Catcher fairly heavy, quite difficult to attach and fell off a few times during testing.
 - Checking oil level is a bit of a hassle.
 - Didn't come with instructions for the mower, only the motor.

VICTA STANDARD AF055 AA90

Target price: \$399

Good points

- Fairly good cutting performance.
 - Easy to push.
 - Easy to start.
 - Well-marked, easy-to-use controls.
 - Good on rough ground.
 - Easy to maintain (if you use premixed fuel).
 - Fairly good mower overall
- #### Bad points
- Difficult to manoeuvre.
 - Quite noticeable vibration.
 - Not easy to fold away for storage.

Petrol lawnmowers

	Brand/model (in rank order)	Manufacturer/ distributor	Origin*	Target price** (\$)	Warranty (years)	Type	Weight (kg)	No of cut positions
	FLYMO RL-480	Volta	Australia	495	1	4-stroke/catcher	28	11
equal	FLYMO RL-320	Volta	Australia	469	1	4-stroke/catcher	27	11
	ROVER Combat 2014	Rover Mowers	Australia	499	1	4-stroke/catcher	28	12
	VICTA Commando AC052 AA92	Victa	Australia	499	1 (B)	2-stroke/catcher	30	11
equal	ROVER 2026	Rover Mowers	Australia	449	1	4-stroke/catcher	25	12
	VICTA Hurricane AF055 AB92 (A)	Victa	Australia	455	1 (B)	2-stroke/catcher	30	11
	MASPORT 300-4	Masport	New Zealand	460	1	4-stroke/catcher	27	10
equal	SUPERSWIFT Lawleader	Allpower Industries	Australia	499	1 (C)	4-stroke/catcher	27	14
	VICTA Standard AF055 AA90	Victa	Australia	399	1 (B)	2-stroke/catcher	29	11
	NOT RECOMMENDED							
	MTD 112-380R670FI92KI	MTD Products	USA	429	2/1 (D)	4-stroke/catcher	27	20

* The engines for all the four-stroke mowers are made in the US.

** Prices shown are a good target to aim for when shopping around, based on nationwide checks in September 1993.

(A) This is Victa's promotional model; it is also sold as the Charger, Clubsman, Concorde,

Jogger, Lawnmaster, Pacer and Wildcat.

(B) Ignition five years

(C) One-year warranty on engine only; not stated for rest of mower.

(D) Mower two years, engine one year.

1 Type

Although the engines work differently, there's little difference between a two-stroke and a four-stroke mower in terms of performance. Four-stroke engines have a sump, so their fuels — oil and petrol — are kept separate. The oil level needs to be maintained so the engine works properly and doesn't seize.

With two-strokes, the oil is mixed in with the petrol. You can buy it premixed or mix it yourself. If you do the latter, the proportions need to be fairly exact. All the petrol mowers in this test use unleaded petrol.

While two-strokes were once considered harder to start, in this test they were easier than the four-strokes and required very little

effort, as long as you don't leave the fuel tap on between mows.

2 Number of cutting positions

The length of grass mown off the top can be changed on all the mowers by adjusting the wheels so the blade is closer to or further from the ground. (This is useful if the grass has been left unmown for some time as it will probably be easier to mow long grass in a couple of stages.)

On most of the mowers in this test changing the cutting position was easy to do: a single lever adjusted all four wheels. The MTD, however, has an individual lever for each wheel and it was difficult to adjust all four to the same height.

3 Cutting height range

This is the range of lengths the mower will cut grass to (that is, the length the grass will be after cutting).

4 Noise

The noise of petrol mowers is one of their main drawbacks, especially for your neighbours. We measured the noise in decibels at 7.5 metres from each mower. Subjectively, our tester didn't find any of them to be annoyingly loud to use. By comparison, electric lawnmowers are around 10 dB quieter than petrol mowers.

NOT RECOMMENDED

MTD 112-380R670FI92KI

Target price: \$429

Bad points

- Only fair cutting performance.
- Difficult to push, tended to get bogged down.
- One of the hardest to start.
- Catcher chute kept clogging up.
- Difficult to adjust blade height — individual levels for each wheel.
- Controls were difficult to move.
- Hard to push up slopes and on rough ground.
- Very hard to adjust handle, and to fold away for storage.
- Checking oil level a bit of a hassle.



NEW CORDLESS ELECTRIC MOWER PUT TO THE TEST

BLACK & DECKER recently introduced a cordless electric mower. The *Stealth* runs on a rechargeable lead acid battery, and is claimed to give you the mobility of a petrol mower without the pollution (see page 36 for a discussion of the relative environmental impact of petrol and electric mowers). It's also said to have lower running costs than petrol mowers.

We thought it well worth looking at as an adjunct to our test of petrol mowers. If it performed well it could prove to be a very popular model, offering the advantages of an electric mower without the disadvantages.

Unfortunately, it didn't do well. Compared to the petrol mowers we tested, its cutting performance was poor, rating only 42%, which is a lot lower than all the petrol mowers we tested this time.

3	4	5	6	7	8	Brand/model (in rank order)	
Cutting height range (mm)	Noise at 7.5 m (dB)	Catcher capacity (kg)	Ease of use score (%)	Cutting performance score (%)	Overall score (%)		
-75	75	4.0	71	76	74	FLYMO RL-480	
-76	76	3.5	70	73	71	FLYMO RL-320	equal
-65	74	4.4	70	73	71	ROVER Combat 2014	
-70	74	3.2	72	68	69	VICTA Commando AC052 AA92	
-60	75	4.5	68	69	68	ROVER 2026	equal
-77	73	3.3	70	66	68	VICTA Hurricane AF055 AB92 (A)	
-73	71	4.0	61	70	66	MASPORT 300-4	
-80	75	3.5	63	66	65	SUPERSWIFT Lawnleader	equal
-75	75	3.3	68	63	65	VICTA Standard AF055 AA90	
-70	71	2.5	54	51	52	MTD 112-380R670F92KI	

5 Catcher capacity

The amount of clippings a catcher could hold was tested by weighing it empty, mowing short grass until it couldn't hold any more clippings, then weighing it again full. This was done four times, and the average weight of a full load of clippings is shown in the table. Note that the chute on the MTD kept clogging up before the catcher was full, so the weight shown doesn't reflect the size of the catcher but how much grass it could hold before clogging.

6 Ease of use

To assess ease of use we considered how easy it was to:

- Push, manoeuvre and start each mower.
- Attach, carry and empty the catcher.
- Adjust the blade height.
- Read and use the controls.

■ Maintain, including changing the blade, refuelling, changing the air filter and, for the four-strokes, checking the oil level.

■ Fold away and store.

■ Use around shrubs, on edges, on slopes and on rough ground.

We also evaluated how comfortable the handles were and measured how much vibration each mower produced.

Pushing, manoeuvring, starting and using the catcher were given the most weight, together making up 56% of the ease of use score.

7 Cutting performance

To rate cutting performance we assessed the mowers on a range of grass lengths:

- Very short: 30 mm cut to 15 mm.
- Short: 50 mm cut to 20 mm.

■ Medium: 75–100 mm cut to 30 mm.

■ Long: 300–400 mm cut to the highest cutting height on the mower.

They were also tested on wet grass, and different types of grass (couch, buffalo and giant couch). More weight was given to the results on short and very short grass, as this is likely to be the length mown most often.

Some of the characteristics for which mowers lost points for performance include giving an uneven cut, requiring a push-pull action to cut properly, engine slowing down, leaving clumps of clippings behind and missing patches of grass.

8 Overall score

The cutting performance score made up 60% of the overall score, the ease of use assessment the other 40%.

Its motor frequently slowed down while mowing, and it left a trail of clipping clumps behind it, even when mowing very short grass, because its chute clogged up. On thicker grass, it required a push-pull motion to cut. It was particularly poor on wet grass, but gave a good cut on long grass. Its weight and poor manoeuvrability made it difficult to cut edges, but it did an adequate job.

To test whether the Stealth could mow an average yard without running out of charge, we used it on an area 20 m by 7 m. The grass was a mixture of couch and buffalo, but it wasn't very thick. Well before the area was mowed, the motor began to feel less and less powerful, and our tester had to slow down. The motor cut out seven times, but came back on again after switching off for a few seconds. It took around 35–40 minutes to mow the whole area. As the charge ran low, our tester found it irritating and tiring to push.

From these results, we feel this mower could probably cut an average yard without completely running out of charge, provided

it was a fairly well-maintained lawn and not too thick. When cutting anything harder or a larger area, it might not make it. According to Black and Decker it is specifically designed for "suburban use" on "manicured lawns".

Unlike mains-powered electric hover

mowers we've tested in the past, it wasn't easy to use. It was heavier than all the petrol mowers we tested this time — nearly 37 kilograms — and felt heavy and hard to push and manoeuvre.

While the cordless electric mower is a great idea, we can't recommend this model.

BLACK & DECKER STEALTH

Target price: \$699

Good points

- Easy to start.
- Virtually no vibration.
- Good handles and controls.

Bad points

- Worst cutting performance compared to the petrol mowers tested this time, even on the short grass it's designed for.
- Heavy and difficult to push.
- Catcher chute kept clogging up.
- Mechanism for adjusting blade height not very robust.
- Hard to use on slopes and rough ground.



TELEPHONES

If your shopping list includes a phone, our test will highlight pitfalls to watch for and tell you at least one phone to avoid.

MOST PEOPLE may well rent their home phone, but there are around 2.5 million out there which have been bought instead. If you've decided to join these phone owners, what should you look for? What can you expect from phones which aren't made by Telecom? Using the 'standard' TELECOM Touchfone 200 as a benchmark, we tested phones with memories costing under \$90. That gave us 14 in all, ranging in price from \$39.95 to \$89.95.

We're pleased to say all but one were satisfactory, and the Telecom 'standard' performed well. The phones fall into two basic groups: 'normal' desk phones with a keypad on a relatively wide body; and 'slim' phones which aren't much wider than the handpiece and have a smaller keypad either inside the handpiece or on the body (the photos below show you which models are which type).

While the phones we tested are all approved by Austel (the government body which oversees the telecommunications industry) and so meet a certain standard, they have a variety of features and characteristics. Some can be wall-mounted, others are Easycall-compatible, some have shrill ringing tones, others very soft.

We took the phones through a complex set of lab measurements for speech intelligibility, acoustic feedback and signal to noise ratio. These results did not reflect the variety in sound quality when using the phones, however, so we didn't use them to rank the phones.

More usefully we can pass on to you the results of user assessments, testing of features and a drop test (will the phone survive a fall from a table?).

WHAT DOES TELECOM TF200 OFFER?

Telecom claims 60% of the phone market. Its Touchfone 200 is considered a benchmark and it's also quite likely to be the phone you already have if you're renting. At \$89.95 it offers 10 direct-access memories, a good memo pad, last-number redial, a recall key (or 'hook-flash') and PABX pause. It is Easycall-compatible and has variable-volume ringing as well as three pitch settings. If you find all this phone talk indecipherable, see the notes to the table overleaf for some explanations.

We included one other TELECOM phone in this test: the Access 20.

Only two phones in the test had better sound quality than the Touchfone 200 — the GTE and NETSET both had slightly less background hiss. The rest were either similar in quality or worse, as in the case of the DUOFONE, which was significantly worse.

SO WHY LOOK ELSEWHERE?

Apart from design or colour, you might want to buy a different phone because it's cheaper — we found several around \$50 which are fine. You might also want features the Touchfone 200 doesn't offer — on-hook dialling, hands-free operation, on-hook hold or a mute button, for example. You may not find one with all

these features within your budget, so it's a question of deciding what's most important to you.

The majority of phones are still white, grey or beige, but a few are available in more daring colours like red or blue. For example, the FEATUREPHONE 8 offers a choice: it comes in red, ivory, mauve or blue.

WHAT COULD YOU LOSE?

Some companies — including Telecom — have a no-nonsense guarantee whereby if your phone breaks down in the 12-month guarantee period, it will be automatically replaced.

Not all companies have such a no-fuss approach. Many will not replace your phone even while it is being repaired. Some repairs may take weeks while waiting for parts. If this matters to you, check when you buy exactly how the guarantee works — where would you have to take the phone, how long would repairs take, would you get a replacement while you wait?

If you call out a Telecom serviceperson thinking the line's faulty when in fact it's the phone you've bought and installed yourself which is the problem, you'll have to pay for the Telecom visit.

PICKING A PHONE

One person's ear-piercing ring is another's 'easy to hear'; not everyone wants Easycall or even lots of memories. So it's not appropriate to recommend a particular phone, or even particular features.

Left to right: AUDIOLINE 33, COMPUTEC 8906, GTE 2010, AUDIOLINE 38, FEATUREPHONE 8, SHIMASU F5010



But if you've decided to buy, here's what to look out for in general:

■ Try the handset. Pick it up, put it down. Does it feel comfortable to hold? Does it click back into place easily, or do you risk leaving the phone off the hook accidentally?

■ Ask to hear the ringing tone. It's surprising how different they are both in terms of pitch and volume. Our tester thought the **HARDIE COMMUNICATIONS T10's** ring was "a little weak", whereas the **GTE** was "very shrill, a high-pitched warble".

■ Some buttons 'click' as they are successfully pressed, others hardly register. And check for sticking buttons.

■ Where are you putting the phone? Check its wall-mountable if that's where you want it.

■ Do all the cords sit snugly under the phone where they connect or do they bounce out, upsetting its balance?

THE RIGHT PHONE FOR THE RIGHT SITUATION

Most of the phones we tested performed perfectly adequately. There is only one we can't recommend: the **DUOFONE ET-11T/P**, which had poor sound quality.

But apart from this one, which phone is the best for you depends what you're looking for. If you're thinking of buying one of these phones, consider the following points:

■ You're on the phone and the kettle starts whistling. Where do you put the handpiece on your wall-mounted phone while you run to turn it off? Some have a special place, others leave the handpiece dangling unless it can sit on a table or desk. The dangle-ers are: **DUOFONE ET-11T/P**, **HARDIE T10**, **HARDIE T20** and the **NETSET**.

■ If you wear a hearing aid, and when the grandchildren are running around, the TV's on and the dog's barking, you like to use its 'T' setting to cut out back-

TO BUY OR RENT: YOUR PHONE OPTIONS

MOST PEOPLE in Australia rent their home phone — in fact, six million of the estimated 8.5 million domestic phones are rented from Telecom. You have two rental options. If you pay around \$30 a year, whenever you have a problem with your telephone, Telecom will fix it on the spot at your home or replace it. Alternatively you can pay about \$15 a year, but if the phone goes wrong you must take it to Telecom, who'll fix or replace it.

The owners of the other 2.5 million domestic phones have decided to buy because they're fed up with beige phones, or fed up with Telecom, want different features — or have calculated they'll save money by buying.

You can pay between \$20 and \$400 for a phone. They come in desk models or wall-mounted, with anywhere between no and 100 memories, hands-free facilities, with a clock radio and so on.

If you buy, the responsibility for repairs — transporting the phone and the inconvenience of being without it, as well as the cost of repairs — is all yours.

According to Telecom, in the majority of cases, if a phone is going to fail it will do so within the first 12 months and in this case will be covered by the warranty. Spare parts cost from \$2 to \$35; the average repair cost is \$30.

If your phone goes wrong remember to read the instructions before contacting Telecom or the phone's manufacturer.

ground noise (see table note 10 overleaf for an explanation), you may be interested in the findings of two hard-of-hearing people from SHHH (Self Help for Hard of Hearing People). We asked them to test the phones, listening to conversations with and without the 'T' switch on. Two phones came out better than the others: the **AUDIOLINE 33** and the **TELECOM Touchphone 200**.

A number of phones claimed to have induction loops suitable for using a hearing aid's 'T' ('telecoil') switch setting, but many more seemed to be suitable. Any phone approved by Austel after February this year must be 'T-compatible'.

Whether you're hard of hearing or not, you should listen to the sound quality in the shop before you buy a phone.

■ The **AUDIOLINE 33** has a larger-than-life keypad which would be a boon to anyone with poor sight or impaired use of their hands.

■ We encountered problems with almost

half the phones' memo pads. These are usually bits of paper attached to the phone for writing details of numbers in the memory. If you're thinking of buying one of these phones, it's something you should check. The best sort has a replaceable paper insert under a protective piece of plastic. With some, the writing surface is permanently fixed to the phone — fine if you remember to use a pencil, but messy if you write in biro and want to change the details. Other problems include having no fixed memo pad, a plastic cover which is difficult to remove, and not enough space to write on. See the table for details.

■ Although the **AUDIOLINE 38** has a hands-free facility — where you can talk into a microphone without lifting the handpiece — it doesn't work very well, and the sound quality is poor. If both caller and receiver speak at once the loudspeaker takes precedence over the microphone and it is difficult to conduct a normal conversation.

Left to right: TELECOM TF200, TELECOM Access 20, NETSET ET-718, AUDIOLINE 4, DUOFONE ET-11T/P, HARDIE COMMUNICATIONS T10, HARDIE COMMUNICATIONS T20, TANDY ET-29



Telephones

Brand/model (in alphabetical order)	Manufacturer/ distributor	Origin	Warranty (years)	Target price (\$) *	Location of number keys	Number of direct- access memories	Total number of memories	Memory memo pad	Last number redial	Recall button
AUDIOLINE 4 (A)	Moss Security	China	1	50	Handset	3	13	OK	✓	✓
AUDIOLINE 33	Moss Security	China	1	80	Base	3	13	Fiddly	✓	✓
AUDIOLINE 38 (A)	Moss Security	China	1	90	Base	0	10	Inconvenient	✓	✓
COMPUTEC 8906 (A)	K Mart	Malaysia	1	59	Base	20	20	Not very good	✓	✓
FEATUREPHONE 8	Access Communications	Hong Kong	1 (B)	90	Base	10	40	Fiddly	✓	✓
GTE 2010	Dick Smith Electronics	Malaysia	1 (C)	80	Base	5	20	Good	✓	✓
HARDIE COMMUNICATIONS T10	Hardie Communications	China	1	50	Base	0	10	OK	✓	✓
HARDIE COMMUNICATIONS T20	Hardie Communications	China	1	40	Handset	0	10	OK	✓	✓
NETSET ET-718	Intertan Australia	China	1	55	Handset	0	10	OK	✓	✓
SHIMASU F5010	Dick Smith Electronics	China	1	60	Base	0	10	Not very good	✓	✓
TANDY ET-29	Intertan Australia	China	1	70	Handset	3	13	OK	✓	✓
TELECOM Access 20	Telecom Technologies	Taiwan	1	75	Base	0	10	OK	✓	✓
TELECOM TF200	Telecom Technologies	Australia	1	89	Base	10	10	Good	✓	✓
NOT RECOMMENDED										
DUOFONE ET-11T/P	Intertan Australia	China	1	45	Handset	0	10	OK	✓	✓

* Prices shown are a good target to aim for when shopping around, based on nationwide checks in August 1993. Anything lower is a bargain.

† Old Telecom dial phone's maximum ring volume: 69 dB.

(A) These phones have been recently superseded or discontinued but should still be available in stores.

(B) No warranty supplied with phone but Access Communications assures us the warranty is one year parts and labour.

(C) Warranty specified as for USA only, but Dick Smith Electronics assures us the Australian warranty period is also one year.

(D) 600 milliseconds only; not EasyCall-compatible.

(E) May be wall-mounted if you buy a kit.

(F) Two pitch settings.

(G) Three pitch settings.

Few drop-outs in the drop test

All the phones in this test were robust enough to survive a drop from a table onto a carpeted floor. We dropped them three times from a height of 700 mm onto a thin synthetic carpet on a firm underlay, and three times by pulling the cord until the phone was pulled off a table and dropped the same distance to the floor.

All the wall-mountable phones*

handsets were dropped three times from 1400 mm — about the height you'd have the phone fixed on the wall — onto a vinyl covered concrete floor.

This harder test had some casualties: the TANDY ET29 stopped working altogether but was repairable, some phones were scratched, and a couple of others cracked in such a way the cracks could enlarge over time: the DUOFONE and the HARDIE COMMUNICATIONS T20. The

phones which survived this test unscathed were: AUDIOLINE 4, AUDIOLINE 33, COMPUTEC 8906, GTE 2010, HARDIE COMMUNICATIONS T10, SHIMASU F5010, TELECOM TF200 and TELECOM Access 20.

WHAT TO BUY

Any of the phones listed below is worth considering. The standard TELECOM TF200 is a good option, but you can buy a phone which performs adequately for \$50 or less. Check in the table for the features you want. If you don't care about features and simply want a good cheap phone with a few memories, the HARDIE COMMUNICATIONS T20 is a good buy at around \$40.

(in alphabetical order)

AUDIOLINE 4	\$50
AUDIOLINE 33	\$80
AUDIOLINE 38	\$90
COMPUTEC 8906	\$59
FEATUREPHONE	\$90
GTE 2010	\$80
HARDIE COMMUNICATIONS T10	\$50
HARDIE COMMUNICATIONS T20	\$40
NETSET ET-718	\$55
SHIMASU F5010	\$60
TANDY ET-29	\$70
TELECOM Access 20	\$75
TELECOM TF200	\$89

"THE ARTHRITIC FINGERS DON'T LIKE IT"

ONE OF our readers, JR of Tasmania, has a few gripes with the TELECOM Touchfone 200: "When held in a man's hand gripped around the centre it cannot be held close to the ear and the mouth. One has to hold it with the tips of the fingers and the thumb. On a long call the arthritic fingers don't like it.

"I recommended the 200 to an 83-year-old friend to save him chasing the old dial phone round the table. I fed in 10 memory numbers for him. Due to the alternate nature of the buttons he often gets the wrong number and has lost confidence in 'it' and me!

"When I put my hand over the mouthpiece to make an aside to someone in the room the listener can still hear. Very dangerous! A 'privacy' button would help."

Perhaps the GTE would suit both JR and his friend better. The handpiece has a high arch which should allow a full grip. It also has very simple, easy-to-read memory patches and buttons (although it only has five direct-access memories). It is one of four we tested with a mute button or equivalent. The others are the COMPUTEC 8906 and HARDIE COMMUNICATIONS T10, and the TELECOM Access 20 has on-hook hold which will do the same thing.

4	5	6	7	8	9	10	PABX pause	Easycall-compatible	On-hook dialing	Hands-free operation	On-hook hold	Mute button	Hearing aid induction loop	Wall-mountable as supplied	Place to put handset on hold when wall-mounted	Ring volume switch settings	Maximum ring volume** (dB)	Brand/model (in alphabetical order)
	✓							✓						✓	✓	off/low/high	74	AUDIOLINE 4 (A)
	✓							✓					✓	(E)	✓	off/low/high	76	AUDIOLINE 33
	✓	✓	✓												not applicable	off/low/high	72	AUDIOLINE 38 (A)
	✓			✓	✓							✓		✓	✓	off/low/high	74	COMPUTEC 8906 (A)
	✓														not applicable	low/high (F)	73	FEATUREPHONE 8
					✓							✓	✓	✓	✓	off/low/high	73	GTE 2010
	✓				✓							✓	✓	✓	✓	low/high	73	HARDIE COMMUNICATIONS T10
	✓												✓	✓	✓	off/low/high	75	HARDIE COMMUNICATIONS T20
														✓	✓	off/low/high	77	NETSET ET-718
														✓	✓	low/med/high	66	SHIMASU F5010
	✓												✓	✓	✓	off/low/high	72	TANDY ET-29
	✓			✓							✓	✓	✓	✓	✓	low/high	75	TELECOM Access 20
	✓										✓	(E)	✓	✓	✓	variable (G)	78	TELECOM TF200
													✓			low/high	67	DUOFONE ET-11T/P

1 Direct-access memories
When you lift the handpiece, numbers programmed into these memories can be accessed by pressing one dedicated key. The better-designed phones have a space next to the key to write the name (see the 'memory memo pad' column). Some phones' memories are less convenient to use. You may have to press a 'memory' button followed by a code of several numbers. Several of the phones in our test had a mixture of both types; some had no direct-access memories at all.

2 Last number redial
This feature saves you redialling time and time again when a number is engaged. A single memory allows you to press one key, and the phone repeats the last number you dialled.

3 Recall button
Also called 'flash', 'hookflash' or 'transfer' button, this momentarily disconnects the phone from the line and acts as a signal to the telephone exchange or PABX (this stands for private automated branch exchange — in lay terms, an internal switchboard). The line is usually disconnected for $\frac{1}{10}$ of a second but it can be up to half a second or more. You need the button for transferring calls and to access Telecom's Easycall service — see right.

4 PABX pause
Not usually required for domestic phones, this feature codes a break in dialling for numbers in memory, such as when the first digit dialled is 0, to get an outside line from a PABX before dialling the actual phone number.

5 Easycall compatibility
Easycall costs about 50 cents a week. It lets you know someone else is trying to get through when you're already on the phone and allows you to switch between two or more calls. To take advantage of the service you need a phone which is compatible and the right type of exchange (about 5% of exchanges are not compatible with Easycall). Not only do you need 'recall', # and * keys, the disconnect time on the 'recall' button must be $\frac{1}{10}$ of a second (100 milliseconds or ms). In our test, the GTE phone had all the right buttons but its disconnect time was 600 ms, so it's not compatible with Easycall.

6 On-hook dialling
An on-hook dial button lets you dial without picking up the handpiece. You can hear the phone the other end ringing, and when it's answered you pick up the handpiece and speak.

7 Hands-free operation
Where a phone has a loudspeaker and an

inbuilt microphone, you can speak into and listen to the phone without picking up the handpiece. The feature didn't work well on the AUDIOLINE 38.

8 On-hook hold
This means you can put the handpiece down on the cradle without hanging up the call. The phone holds the line but the person at the other end can't hear anything until the handpiece is picked up again. So the feature acts as a mute button and, for wall-mounted phones, a place to hang up the receiver mid-call.

9 Mute button
This disconnects the microphone in the handpiece, so you can talk to someone else in the room without the caller hearing. Some mute buttons work only while they're being held down, others you can click on and off.

10 Hearing aid induction loop
Some phones are claimed to be compatible with hearing aids that have a 'T' ('telecoil') setting switch — this provides direct magnetic coupling between the phone earpiece and the hearing aid. The wearer can switch off the hearing aid's microphone and cut out background noise if he or she wishes. You don't have to use this setting, but some people find it helpful.

GARDEN HOSES

On the trail of a hose that won't kink!

OUR SUBSCRIBER research indicates 'kinking' is the problem with garden hoses that annoys most gardeners. It seems all you have to do is look at some hoses and they curl themselves into knots which stop the water flowing through.

Hose manufacturers are acutely aware that gardeners don't like hoses that kink: some claim to make kink-resistant hoses. Others have developed new technology to ensure the water keeps coming through even if the hose does kink.

Is there really any such thing as a

kinkproof hose? What other factors should you consider before buying a new garden hose?

WHAT WE TESTED

We purchased domestic garden hoses both with and without end fittings, available in a majority of states and with a stated internal diameter of 12 mm and a length of 18 m. If a hose wasn't available in this length, we bought the nearest length to it.

As well as testing for kink-resistance, we rated their ability to resist ultraviolet (UV) radiation, their flexibility and burst resistance. Only two of the 19 hoses tested scored highly in all these categories, while another five also did well enough to make our *What to buy* list (see overleaf). All the other hoses scored badly enough for kinking or pressure resistance for us not to recommend them.

KINKING

Kink-resistant hoses are the latest technology in garden hose design. The **HARDIE POPE Vortex**, for example, has ribs along its inside surface, and the



Garden hoses

Garden hoses					1	2	3		
Brand/model (in rank order)	Manufacturer/ distributor	Price* (\$)	Warranty (years)	Length – stated/ measured (metres)	Internal diameter (mm)	Supplied with fittings	Pressure test score (%)	Kinking score (%)	
	NYLEX Tripleflex	Nylex	29.95	10	18/18.7	12.0	✓	88	75
	HARDIE POPE Vortex	Hardie Pope	31.86	10	18/18.9	13.3	✓	76	75
	HARDIE POPE Tricoflex	Hardie Pope	22.95	5	18/18.5	12.4	✓	81	50
equal	MITRE 10 Gardener's Own	Mitre 10	29.50	10	18/18.4	12.0	✓	74	50
	NYLEX Premier	Nylex	28.00	6	20/20.3	11.8		67	50
	NYLEX Commando	Nylex	27.95	2	18/18.4	11.5	✓	77	50
	BBC Premium Quality	BBC Hardware	25.95	10	18/18.5	11.2	✓	65	50
	NYLEX Budgetwise	Nylex	8.00	1	18/18	11.6		77	25
equal	GARDENER'S CHOICE	K Mart	24.95	12	18/18.2	12.2	✓	64	25
	TARGET	Target	9.75	2	15/14.7	11.2	✓	64	25
	LAWNMASTER	Esdan Plastics	12.00	1	18/17.3	12.5		68	25
	GARDEN GREEN	Woolworths	10.32	none stated	18/18	11.5	✓	30	50
	RX PLASTICS	RX Plastics	18.45	5	18/18.7	11.2	✓	49	25
	HARDIE POPE Gold	Hardie Pope	18.34	3	18/17.9	12.2	✓	59	25
	HARDIE POPE Titan	Hardie Pope	14.95	3	18/18.6	12.4		30	25
	BIG W	Big W	10.78	2	18/18.9	11.4	✓	19	25
	HOME GARDENER	Davids Holdings	12.95	1	15/15.1	11.5	✓	3	25
equal	GRO-WELL	Franklins	10.28	2	18/18.5	11.7	✓	0	25
	THE PRICE BRAND	K Mart	10.78	2	20/19.9	12.3	✓	0	25

All the hoses were manufactured in Australia. * Prices given are those paid in June 1993.

manufacturer claims although it can curl into kinks, the ribs enable water to continue to run through.

Our results indicate all the hoses tested could be kinked but the **NYLEX Tripleflex** and the **HARDIE POPE Vortex** can definitely be described as kink-resistant. They have thick walls which usually enable the hose to untwist as a loop is tightened. By contrast, some hoses will kink so easily they are not worth buying — they tend to kink again in the same spot, indicating permanent damage has probably occurred.

Most of the hoses that performed well in the kink test were comparatively expensive but at least one cheap one, **GARDEN GREEN**, did reasonably well — only to be let down by its results for pressure resistance.

OUT IN THE WEATHER

Exposure to the UV radiation in sunlight is probably the major cause of degradation of plastics for outdoor use, including garden hoses. We exposed the hoses to intense UV radiation for 28 days (double the length of time required in Australian Standard 2620) to find out how quickly they would fade or crack when left out in the sun. They all became sticky after exposure but were very little affected by the UV overall. None cracked or split when flexed after exposure.

Obviously a much longer testing period would be needed to draw firm conclusions about which hoses are the most

UV-resistant. Guarantees offered vary from one to 10 years — we think those with longer guarantee periods probably contain more UV stabilisers, making them more resistant to fading and cracking when left out in the sunlight (they were also more expensive).

A similar kind of result was achieved when we put the hoses through a low-temperature flexibility test. This test measured how long it takes to bend a hose that's been chilled to freezing point. Again our test was more arduous than required in the Australian Standard and, again, all hoses passed easily, so it appears manufacturers have succeeded in making hoses that would be easy to work with on a cold winter's day.

BURST RESISTANCE

Water was pumped into the hoses at typi-

cal maximum mains pressure to measure how much they would swell and at what point — if at all — they would actually burst. None of them did burst, but several can't be recommended because they swelled by more than 25% of their unpressurised external diameter. Because they usually swell near the tap or nozzle, swelling greater than 10% could cause plastic attachments to separate from the hose. Only two, the **HARDIE POPE Tricoflex** and **NYLEX Tripleflex**, swelled less than 10%. Even at maximum water pressure, consumers should be able to expect hoses not to swell excessively.

OTHER FACTORS TO CONSIDER

■ The internal diameters of the hoses varied considerably. When purchasing we looked for those with a claimed internal diameter of 12 mm, but the measured

WHAT WE DIDN'T TEST

THE FOLLOWING BRANDS were excluded because they were not available in a majority of states: Claber Garden Pro, McEwans, Polo and Mirage. The Esdan Star Premium and Esdan Turfmaster were also excluded because they were not widely available — the manufacturer was unable to name a store where we could buy them. All soaker hoses were excluded.

Even though some house brands have been included in the test, it is difficult to be sure which manufacturers supply certain house brands because contracts between retailers and manufacturers change from month to month and up to three manufacturers may supply the one house brand. This means the house brand hoses included in this test may not always be the brand stocked by those stores. Manufacturers are also often asked by retailers to make a certain number of hoses at a particular price for a one-off release. This situation will often occur if a price war is going on.

5		Brand/model (in rank order)
Low-temperature flexibility score (%)	Overall score (%)	
82		NYLEX Tripleflex
75		HARDIE POPE Vortex
66		HARDIE POPE Tricoflex
66		MITRE 10 Gardener's Own
66		NYLEX Premier
66		NYLEX Commando
65		BBC Premium Quality
57		NYLEX Budgetwise
54		GARDENER'S CHOICE
54		TARGET
53		LAWNMASTER
49		GARDEN GREEN
48		RX PLASTICS
46		HARDIE POPE Gold
41		HARDIE POPE Titan
36		BIG W
30		HOME GARDENER
29		GRO-WELL
29		THE PRICE BRAND

1 Internal diameter

Although nominally all 12 mm in diameter, the hoses we tested in fact varied in size slightly. A larger diameter is an advantage if you use a hose for any high-volume watering, such as filling a pool — it'll speed up the operation.

2 Pressure test score

The pressure test rating was based on the hose's ability to accommodate typical maximum mains water pressure with minimum swelling.

3 Kinking score

This is one of the main areas of difference between the hoses. They were rated as 'difficult to kink', 'sometimes possible to kink' or 'easy to kink'; no hose was totally kinkproof.

4 Low-temperature flexibility score

All the hoses were able to be bent reasonably quickly at a low temperature, so would be usable on a cold winter's day. Perhaps not surprisingly, many of those that kinked easily — and which often had thinner walls — performed better in this test, but most gardeners wouldn't regard it as a preferred trade-off.

5 Overall score

The above three factors were weighted as follows to give the overall score:

- Pressure test score: 40%.
- Kinking score: 40%.
- Low-temperature flexibility score: 20%.

range varied from 11.2 mm (BBC Premium Quality, TARGET and RX PLASTICS) to 13.3 mm (HARDIE POPE Vortex). Hoses with larger diameters enable a much greater volume of water to pass through. This may be worth considering if you're likely to use a hose for long tasks like filling a swimming pool.

■ We also performed a squash test to simulate what would happen if the hoses were run over by a car on a frosty morning. All the hoses withstood this test — there were no visible signs of damage or permanent deformation on any of them.

WHICH HOSE, DO YOU SUPPOSE?

Our results indicate quality is closely related to price. All hoses in our *What to buy* list are in the mid to upper price bracket (over \$20). Those which didn't make it to the list tended to kink easily or swell under pressure. The best hoses tested were the NYLEX Tripleflex and the HARDIE POPE Vortex, but if you're after a bargain the HARDIE POPE Tricoflex performed almost as well and is notably cheaper — it's our 'Best Buy'.

WHAT TO BUY

NYLEX Tripleflex	\$29.95
HARDIE POPE Vortex	\$31.86
HARDIE POPE Tricoflex	\$22.95
MITRE 10 Gardener's Own	
equal Premium Quality	\$29.50
NYLEX Premier	\$28.00
NYLEX Commando	\$27.95
BBC Premium Quality	\$25.95

* Prices given are those paid in June 1993.

FOR PEOPLE WITH DISABILITIES

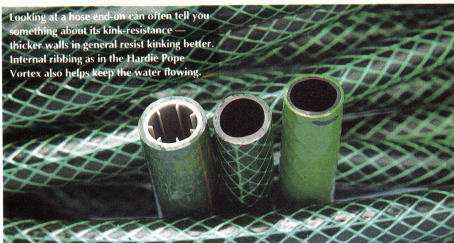
THE HOSES were examined by an occupational therapist from the Independent Living Centre. Fittings are the main factor that need to be considered by people with disabilities when purchasing a garden hose. People with reduced hand function should buy or use any type of snap-on plastic hose fittings other than the unbranded bright orange and black ones fitted to K Mart's GARDENER'S CHOICE and THE PRICE BRAND hoses. The connectors fitted to these hoses could only be removed using two hands.

It was found to be easy to screw the tap adaptors onto taps in all cases. It was easy to push on the hose connectors with one hand. No problems were found with operating any of the spray nozzles.

HOSE CONSTRUCTION

REINFORCED garden hoses consist of two or three layers of plastic (PVC) with reinforcing surrounding the innermost layer, though the thickness of all the layers can vary considerably, usually with the price of the hose. The composition and thickness of the layers will determine the strength, flexibility and UV resistance of the hose. Polyester reinforcing usually runs helically around the hose but some hoses also have longitudinal fibres for extra strength. The thickness and closeness of the fibres affects the burst strength and handling characteristics of the hose.

Looking at a hose end-on can often tell you something about its kink-resistance — thicker walls in general resist kinking better. Internal ribbing as in the Hardie Pope Vortex also helps keep the water flowing.



HOSE CARE

A few points to remember to ensure your new hose has a long life.

- Don't leave it exposed to sunlight because the UV radiation will eventually break down the components of the plastic, causing fading and cracking.
- Don't turn the hose off at the nozzle and leave it under pressure.
- Don't leave your hose in the long grass where it can be attacked by the lawnmower.
- Don't use it as a rope, attempt to force it free if it becomes caught, run over it in the car or deliberately kink it to temporarily stop the water flow.
- Use a hose reel or keep the hose coiled on the ground.

FITTINGS

FIFTEEN of the 19 hoses came with snap-on plastic fittings. Fitted hoses typically have a hose connector (with a tap adaptor) at one end and an adjustable spray nozzle at the other. Six different types of fitting were identified in this test, including three types of branded fitting from Nylex and Hardie Pope and three types of unbranded fitting of similar design.

We found these O-ring sealed fittings convenient to use — hoses and accessories could be disconnected and reconnected with ease in most cases. We also performed two simple tests involving the fittings to find out if they would blow off under pressure and to assess their compatibility with other hoses.

None of the fittings blew off in the pressure test, although a few minor leaks were noted. The NYLEX Commando and MITRE 10 hoses had nuts which were difficult to tighten sufficiently to stop leaks; Mitre 10 has informed us the fittings we got are not those normally supplied with its hoses.

The HARDIE POPE Vortex was the only hose which had a minor problem with compatibility. When attaching new fittings to it, the ribs can interfere with the seal, causing leakage. This would only be a problem if you had to cut off a length of hose before attaching new fittings (the ribs were machined off to attach the fittings it was supplied with).

The GARDEN GREEN, RX PLASTICS and TARGET hoses were more difficult to push onto their fittings. They may need to be softened in hot water before attaching fittings, but the close fit should provide a good seal.



WHAT DO YOU KNOW?

- 1** When you buy a new computer, you will pay sales tax on both the hardware and any software programs you purchase.
True or false?
- 2** If you're considering buying a personal computer, you should do so as soon as possible because their prices increase by around 33% each year.
True or false?
- 3** A computer is tax deductible if it is used in the production of your income. If it is used half the time for games and entertainment, only half is deductible.
True or false?
- 4** A bulletin board (BB) is a computer storage and communications facility that can be accessed by a modem over a phone line, enabling individuals, members of clubs and businesses to communicate with each other. **True or false?**
- 5** A spreadsheet enables you to store, manipulate, retrieve and print data; it is like a computerised filing cabinet.
True or false?
- 6** At present-day prices, beer bought in a carton of 24 cans from a discount bottle shop will cost around \$1.50 for a 375 mL can.
True or false?
- 7** Beer made from a home brewing kit will cost no more than 18 cents for the equivalent of a can, which makes it about a fifth the price of a can of commercial beer.
True or false?
- 8** Terminator is the name of a light beer sold in America, so named because the brewer used Arnold Schwarzenegger in its advertising campaign.
True or false?
- 9** Australian and New Zealand beers tend to be mild-tasting and light-bodied because brewers use a high percentage of 'adjuncts' — fermentable materials other than malted barley — in their brewing.
True or false?
- 10** Pale ale is a style of low-alcohol beer which originated in the Midlands area of England.
True or false?

ANSWERS

- 1. False.** Sales tax is included in the price of hardware but it is not charged on most software programs.
- 2. False.** In fact, there is a rule of thumb that says each year the price of personal computers goes down by a third and their power goes up by a third. The longer you wait, the better you'll buy.
- 3. True.**
- 4. True.**
- 5. False.** Spreadsheets provide a quick and easy way to use your computer to work with lots of figures and make recalculations very fast. The spreadsheet is like a large piece of paper with lots of rows and columns ruled on it. The intersection of each row and column makes a cell. Your computer screen is only big enough to display a number of cells at a time but you can scroll across or down this large sheet to see what you want. By contrast, a **database** works like a filing cabinet, enabling you to store, manipulate and retrieve data.
- 6. False.** The cost per can is actually around 95 cents, not \$1.50.
- 7. True.**
- 8. False.** Terminator is, in fact, a German doppelbock beer. Doppelbocks are distinctively dark beers with a high alcohol content of between 8% and 14%. For traditional reasons, they are always given a name ending in the letters 'ator'. Others include Celebrator and Kulminator.
- 9. True.** The most commonly used adjunct is cane sugar, which imparts little or no flavour to the beer and tends to lighten the body.
- 10. False.** The pale ale style was perfected in the Midlands area of England, but it is not a low-alcohol beer. It is usually well-hopped and relatively strong, containing between 4.5% and 5.5% alcohol.



RECALLS AND BANS

If you find a recall or ban not on our list please let us know.

Some furniture retailers have issued an electrical safety warning concerning WATERBED HEATER PADS branded 'HEATWAVE', 'NIGHTMOODS' 'TECH MIRAGE' and 'TRANQUILITY' (made between 1/6/91 and 6/8/92, affected range numbered 010691 to 060892) as an electrical fault may lead to scorching of the pad and damage to the bed. Date codes are marked on the pad like this: 171091 meaning 17 October 1991. Live parts may be contacted if a user starts to dismantle the bed to investigate failure of the heater pad

without first disconnecting from power supply. Contact your retailer, or call the Waterbed Association of Retailers and Manufacturers on (02) 621 3275 for advice. Also see *Hotbed of contention* on page 4.

Smith's Snackfood Company has recalled SAMBOY CHIPS and CC's CHEESE FLAVOURED SNACKS as sewing needles were found in packets in three separate incidents. Affected products are: Samboy chicken flavour ('best before' date 17 September — FW), Samboy barbecue flavour (10 September — FW) and CC's cheese flavour (24 August — FN). Return any of these products

to Freepost 38 Rydalmer, Consumer Affairs Manager, The Smith's Snackfood Company, PO Box 142, Rydalmer 2116 (all costs refunded).

Rover Australia has recalled RANGE ROVER and DISCOVERY VEHICLES (purchased between 10/8/92 and 15/9/92) as switches may fail, allowing the windows and sunroof to operate unaided without further pressure on the switch. VIN numbers of affected vehicles are: 625589 to 627471 (Range Rovers) and 033864 to 036637 (Discovery). Contact your Rover dealer to arrange replacement of switches.

PLEASE SEND US

■ change of address ■ renewal
 ■ subscription inquiries
 Just write to:
The Subscription Section
Australian Consumers' Association
 57 Carrington Road, Marrickville 2204.
 or phone (02) 558 8088

TWELVE MONTH INDEX

DECEMBER 1992 — NOVEMBER 1993

(T) test
 (D) includes assessment of suitability for those with disabilities
 (F) feature — general advice
 (M) feature — includes market information
 (S) subscriber survey or user trial
 (C) Consumer in law
 (L) letter
 (U) update of previous report
 * additions or corrections to reports, small follow-up items

Air quality, indoor	Jan(F), Mar*	Flame-retardant spray	Sep(T)	Paint, exterior	Dec(T)
Alternative medicine	Oct (F)	Food		Ovens, electric wall	Jun(T,D), Oct(U,T,D), Nov*
Antibiotics	Aug(F)	frozen desserts	Dec(T)	Perfume	Jul(T)
Appliances		fruit substitutes for kids	Mar(T)	Phones, cordless	Dec(T,D)
small 'disposable'	Oct (F)	grains and cereals	Jun(F)	Pool fences	Dec(F),May(L)
Asthma management	May(F)	packaged meals for kids	Feb(M)	Printers, computer	Mar(T)
Audio equipment		pasta, 'fresh'	Jul(T)	Product recalls and bans	May(C)
CD players, multi-disc	Mar(T)	Garden hoses	Nov(T)	Property, investing in	Jul(F)
digital recording	Jun(M)	Gas heaters, flued	Apr(T,D)	Recycling	Apr(F)
Australian-made labelling	Jan(F)	Glues	Jul(M)	Reduced-alcohol beer	Apr(T)
Barbecues, kettle	Jan(T)	Grains and cereals	Jun(F)	Refrigerators	
Batteries, car	Sep(T)	Hair and hair products	Jan(F)	350-400 litre	May (T)
Beer, reduced-alcohol	Apr(T)	Heaters, gas flued	Apr(T,D)	Renewable energy sources	Sep(F)
Bicycles, hybrid	Aug(T,S)	Heating, home	May(F)	Renovating, energy-efficient	Oct(F)
Breast cancer	Jan(F)	High chairs	Jul(T,D)	Savings plans	Mar(F)
Buying a used car	Oct(F)	Hiring tradespeople	Jul(F), Nov*	Security screen doors	Sep(F)
Buying guide, annual	Dec	Home heating	May (F)	Sewing machines	Apr(T,D)
Cameras, compact	Feb(T)	House and contents insurance	Oct (M)	Shade materials	Jan(F)
Cars		Hybrid bikes	Aug(T,S)	Shampoo vacuum cleaners	May(T)
batteries	Sep(T)	Impact drills	Aug(T,D)	Skates, in-line	Dec(T)
buying used	Oct (F)	In-line skates	Dec(T)	Slimming programs	Jun(M)
child restraints	Apr(M)	Index, four-year	Jun	Standards Australia	Dec(F),Feb(L)
clamping and tow-away	Feb(C)	Indoor air quality	Jan(F),Mar*	Sun protection	Jan(F)
insurance	Dec(S)	Insulation	Apr(F)	Superannuation guarantee	Feb(F),Jul*
CD players, multi-disc	Mar(T)	Insurance		Supermarket survey	Jul(S)
Child car restraints	Apr(M)	car	Dec(S)	Supermarket trading terms	Jun(F)
Childcare questionnaire	Nov	claims	Aug(C)	Tax, rights and obligations	Mar(C)
Cigarettes, low-tar	Aug(T)	complaints schemes	Oct (F)	Telecommunications	Feb(M)
Clothes labelling	Apr(C)	house and contents	Oct (M)	Telephone, harassment by	Oct(C)
Cockroaches, getting rid of	Nov(T)	life	Sep(M)	Telephones	Nov(T)
Computer printers	Mar(T)	Investing in property	Jul(F)	Televisions	
Computers, notebook	Dec(T)	Labelling		pocket-sized	May(T)
Cordless phones	Dec(T,D)	Australian-made	Jan(F)	portable	Apr(T,D)
Cosmetics, animal testing	Mar(M)	clothes	Apr(C)	Vacuum cleaners	
Credit cards	Feb(F)	Laundry detergents	Mar(T)	medium-priced	Oct(T,D)
Debt harassment	Jul(C)	Lawnmowers, petrol	Nov(T)	shampoo	May(T,D)
Desserts, frozen	Dec(T)	Life insurance	Sep(M)	Video recorders	Mar(T)
Detergents, laundry	Mar(T)	Light bulbs, long-life	Jun(T)	Vitamins and minerals	Sep(F)
Digital recording	Jun(M)	Low-tar cigarettes	Aug(T)	Wall ovens, electric	Jun(T,D), Oct(U,T,D), Nov*
Dishwashers	Feb(T,D), Nov(U,T,D)	Matresses	Aug(M),Oct*	Washing machines	Jan(T,D),Mar*,Sep(T,D)
Drills, impact	Aug(T,D)	Medicine, alternative	Oct (F)	Water filters	Feb(T),Sep(U)
Energy, renewable	Sep(F)	Minerals and vitamins	Sep(F)	Water heaters	Aug(T,S),Nov*
Environment quiz	May(F)	Mortgage switching	Nov(F)	Weight loss programs	Jun(M)
Exterior paint	Jun(T)	Nappies	Nov(M)		